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U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

BUREAU OF LABOR STATISTICS

ETHELBERT STEWART, Commissioner

BULLETIN OF THE UNITED STATES } { No. 299
BUREAU OF LABOR STATISTICS }

MISCELLANEOUS SERIES

PERSONNEL RESEARCH AGENCIES

A GUIDE

ORGANIZED RESEARCH IN EMPLOYMENT
MANAGEMENT, INDUSTRIAL RELATIONS
TRAINING, AND WORKING CONDITIONS

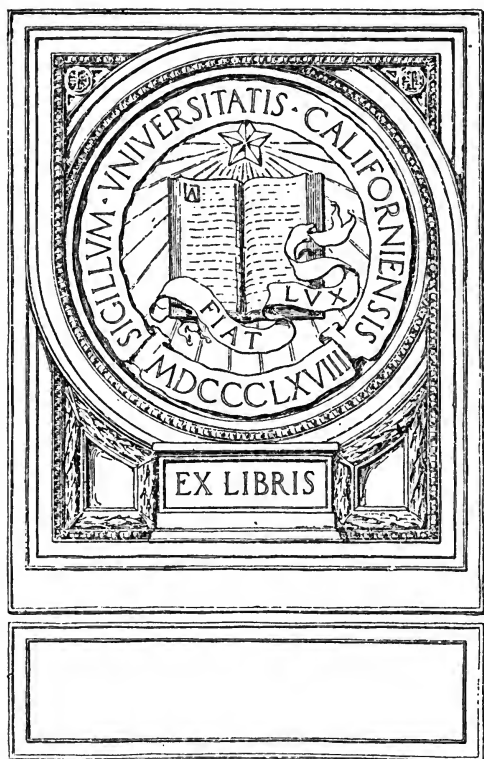
By J. DAVID THOMPSON



NOVEMBER, 1921

WASHINGTON
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1921



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U. S. DEPARTMENT OF LABOR
UNITED STATES GOVERNMENT

LABOR'S HISTORY **HF 554**

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LISTIN OF THE
BUREAU OF LABOR

PERSONNEL

ORGANIZED EXHIBITS IN EMPLOYMENT
MANAGEMENT DISTRICTS
TRAINING AND WORKING

BY J. DAVID



NOVEMBER 1951

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BULLETIN OF THE U. S. BUREAU OF LABOR STATISTICS.

NO. 299.

WASHINGTON.

NOVEMBER, 1921

PERSONNEL RESEARCH AGENCIES.

INTRODUCTION.

This bulletin has been prepared in response to the request contained in the following resolution adopted by a preliminary conference on personnel research, held in Washington, D. C., November 12, 1920, under the auspices of Engineering Foundation and National Research Council:

Resolved, That in order to provide the information about existing agencies in the field of personnel research, which is prerequisite to coordination of their work, the United States Bureau of Labor Statistics be requested to undertake a survey of such agencies and to issue a bulletin describing their scope, methods, and present activities.

The purpose of this preliminary conference, which was attended by 40 representatives of organizations of labor, manufacturers, employment managers, engineers, physicians, educators, economists, and social workers, was to consider the practicability of bringing about cooperation among the many bodies conducting research relating to persons employed in industry and commerce. As a result of its deliberations the Personnel Research Federation was organized in March, 1921.

Personnel research has been construed to include within its scope studies and investigations of all kinds concerned with any of the problems of (a) employment management and industrial relations (such as selection and placement of employees, job analyses and specifications, rating and grading, lines of promotion, labor turnover, absenteeism, wage and other incentives, joint control, etc); (b) vocational psychology, including the development and standardization of intelligence and trade tests; (c) training of managers, foremen, and workmen, either in schools and colleges, in the factory, or under schemes of cooperation between educational institutions and industrial establishments; (d) working conditions in relation to output, including hours of labor, fatigue, lighting, ventilation, food; (e) health hazards and occupational diseases; (f) safety codes and appliances; also the special problems connected with the employment of women and young persons, foreign born workers and colored workers, the handicapped or disabled, and the mentally deficient or unstable.

The agencies whose activities are described herein are arranged in the following main divisions:

(1) Official agencies: (a) Federal, (b) State, (c) Municipal.

(2) Nonofficial agencies: (a) Associations, foundations, research bureaus, and institutions; (b) Universities and colleges.

In each group the entries are arranged alphabetically.

To facilitate reference to agencies concerned with a particular branch of personnel research a classified list arranged according to the following scheme is prefixed:

Employment management.

Intelligence tests, trade tests, etc.

Psychopathic and mentally deficient employees.

Placement. Unemployment.

Industrial relations (incentives, adjustment, joint control, etc.).

Cost of living. Budgets.

Employment of women.

- Child labor. Vocational guidance. Juvenile placement.

Foreign-born workers.

Colored workers.

Handicapped and disabled workers.

Training. Vocational education.

Working conditions. Hours of labor. Fatigue and efficiency.

Industrial hygiene and occupational diseases.

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I. FEDERAL AGENCIES.

(a) IN THE DEPARTMENT OF LABOR.

BUREAU OF LABOR STATISTICS.

1712 G Street NW., Washington, D. C. Ethelbert Stewart, commissioner.

Organized January 1, 1885, under act of Congress approved June 27, 1884, as the Bureau of Labor in the Department of the Interior, it was given independent status as the Department of Labor (without Cabinet representation) in 1888. It again became the Bureau of Labor in 1903 under the Department of Commerce and Labor, from which it was transferred, with change of name to Bureau of Labor Statistics, to the present Department of Labor upon its establishment in 1912.

The function of the bureau as stated in the law creating it is to "collect information upon the subject of labor, its relation to capital, the hours of labor and the earnings of laboring men and women, and the means of promoting their material, social, intellectual and moral prosperity."

Prior to July, 1912, the publications of the bureau consisted of annual and special reports and a bimonthly bulletin containing miscellaneous articles on labor and related topics. Since that time bulletins have been issued at irregular intervals, each number devoted to a special subject in one of the following groups, under which they are classified in recent printed lists, viz: Wholesale prices, Retail prices and cost of living, Wages and hours of labor, Employment and unemployment, Women in industry, Workmen's insurance and compensation, Industrial accidents and hygiene, Conciliation and arbitration, Labor laws of the United States, Foreign labor laws, Vocational education, Labor as affected by the war, Miscellaneous series. They include also the Proceedings of the International Association of Public Employment Service (see p. 112), International Association of Industrial Accident Boards and Commissions (see p. 111), and Association of Governmental Labor Officials (see p. 85), and of various employment managers' conferences (Nos. 196, 202, 227, 247).

The studies on wages and hours of labor cover the following industries: Anthracite and bituminous coal mining (No. 279); boot and shoe industry (Nos. 134, 154, 178, 232, 260, 278); clothing and cigars (Nos. 135, 161, 187); cotton goods (Nos. 128, 150, 190, 239, 262, 288); hosiery and underwear (Nos. 134, 154, 177); iron and steel (Nos. 151, 168, 218); lumber, millwork, and furniture (Nos. 129, 153, 235); men's clothing (No. 187); silk (Nos. 128, 150, 190); slaughtering and meat packing (Nos. 252, 294); building and repairing of steam

railroad cars (Nos. 137, 163); street railway employment (No. 204); woolen and worsted goods (Nos. 128, 150, 190, 238, 261, 289); petroleum industry (No. 297, in press). They include also a special study of the dress and waist industry of New York City (No. 146) and the preliminary report of an industrial survey in selected industries, 1919 (No. 265).

Results of other special investigations are included in the series of bulletins as follows:

(a) *Employment and Unemployment:*

- No. 172. Unemployment in New York City. 1915. 24 p.
- No. 182. Unemployment among women in department and other retail stores of Boston. 1916. 72 p.
- No. 183. Regularity of employment in the women's ready-to-wear garment industries. 1916. 155 p.
- No. 195. Unemployment in the United States. 1916. 115 p.
- No. 235. Employment system of the Lake Carriers' Association, by P. F. Brissenden. 1918. 58 p.
- No. 241. Public employment offices in the United States, by J. G. Herndon. 1918. 100 p.

(b) *Women in Industry:*

- No. 116. Hours, earnings, and duration of employment of wage-earning women in selected industries in the District of Columbia, by M. L. Obenauer. 1913. 68 p.
- No. 119. Working hours of women in the pea canneries of Wisconsin, by M. L. Obenauer. 1913. 54 p.
- No. 122. Employment of women in power laundries in Milwaukee, by M. L. Obenauer. 1913. 92 p.
- No. 160. Hours, earnings, and conditions of labor of women in Indiana mercantile establishments and garment factories, by M. L. Obenauer and F. W. Valentine. 1914. 198 p.
- No. 176. Effect of minimum wage determinations in Oregon, by M. L. Obenauer and B. von der Nienburg. 1915. 108 p.
- No. 180. The boot and shoe industry in Massachusetts as a vocation for women. 1915. 109 p.
- No. 193. Dressmaking as a trade for women in Massachusetts, by M. Allinson. 1916. 180 p.
- No. 215. Industrial experience of trade-school girls in Massachusetts. 1917. 275 p.
- No. 217. Effect of workmen's compensation laws in diminishing the necessity of industrial employment of women and children, by M. K. Conyngton. 1917. 170 p.
- No. 285. Minimum wage laws of the United States, by L. D. Clark. 1921. 345 p.

(c) *Industrial Accidents and Hygiene:*

- No. 104. Lead poisoning in potteries, tile works, and porcelain enameled sanitary ware factories, by Alice Hamilton. 1912. 95 p.
- No. 120. Hygiene of the painters' trade, by Alice Hamilton. 1913. 68 p.
- No. 127. Dangers to workers from dusts and fumes and methods of protection, by W. C. Hanson. 1913. 22 p.
- No. 141. Lead poisoning in the smelting and refining of lead, by Alice Hamilton. 1914. 97 p.
- No. 157. Industrial accident statistics, by F. L. Hoffman. 1915. 210 p.
- No. 165. Lead poisoning in the manufacture of storage batteries, by Alice Hamilton. 1915. 38 p.
- No. 179. Industrial poisons used in the rubber industry, by Alice Hamilton. 1915. 64 p.
- No. 209. Hygiene of the printing trades, by Alice Hamilton and C. H. Verrill. 1917. 118 p.
- No. 219. Industrial poisons used or produced in the manufacture of explosives, by Alice Hamilton. 1917. 141 p.
- No. 231. Mortality from respiratory diseases in dusty trades (inorganic dusts), by F. L. Hoffman. 1918. 458 p.
- No. 234. The safety movement in the iron and steel industry, 1907 to 1917, by L. W. Chaney and H. S. Hanna. 1918. 299 p.

- No. 236. Effects of the air hammer on the hands of stonecutters. 1918. 147 p.
 No. 251. Preventable death in the cotton manufacturing industry, by A. R. Perry. 1919. 534 p.
 No. 253. Women in the lead industries, by Alice Hamilton. 1919. 38 p.
 No. 256. Accidents and accident prevention in machine building. Revision of No. 216, by L. W. Chaney. 1920. 123 p.
 No. 267. Anthrax as an occupational disease, by J. B. Andrews. 1920. 186 p.
 No. 280. Industrial poisoning in making coal-tar dyes and dye intermediates, by Alice Hamilton. 1921. 87 p.
 No. 291. Carbon monoxide poisoning, by Alice Hamilton. 1921 (in press).
 No. 293. The problem of dust phthisis in the granite stone industry, by F. L. Hoffman. 1921 (in press).
 No. 298. Causes and prevention of accidents in the iron and steel industry, by L. W. Chaney. 1921 (in press).

(d) *Vocational Education:*

- No. 147. Wages and regularity of employment in the cloak, suit, and skirt industry, with plans for apprenticeship for cutters and the education of workers in the industry. 1914. 197 p.
 No. 159. Short-unit courses for wage earners and a factory school experiment. 1915. 93 p.
 No. 162. Vocational education survey of Richmond, Va. 1916. 333 p.
 No. 199. Vocational education survey of Minneapolis. 1917. 592 p.

(e) *Miscellaneous:*

- No. 123. Employers' welfare work, by E. L. Otey. 1913. 80 p.
 No. 208. Profit sharing in the United States, by B. Emmet. 1917. 188 p.
 No. 250. Welfare work for employees in industrial establishments in the United States. 1919. 139 p.
 No. 263. Housing by employers in the United States, by L. Magnusson. 1920. 283 p.
 No. 282. Mutual relief associations among Government employees in Washington, D. C., by V. B. Turner. 1921. 38 p.
 No. 283. History of the Shipbuilding Labor Adjustment Board, by W. E. Hotchkiss and H. R. Seager. 1921. 107 p.
 No. 299. Personnel research agencies: a guide to organized research in employment management, industrial relations, training, and working conditions, by J. D. Thompson. 1921.

The following special publications have been issued without serial numbering:

Tentative quantity and cost budget necessary to maintain a family of five in Washington, D. C., at a level of health and decency. 1919. 75 p.

Wages and hours of labor in the coal-mining industry in 1919. 1919. 20 p.

Minimum quantity budget necessary to maintain a worker's family of five at a level of health and decency. 1920. 20 p.

Descriptions of occupations, prepared for the United States Employment Service, 1918-19: Boots and shoes, harness and saddlery, and tanning; Cane-sugar refining and flour milling; Coal and water gas, paint and varnish, paper, printing trades, and rubber goods; Electrical manufacturing, distribution, and maintenance; Logging camps and sawmills; Medicinal manufacturing; Metal working, building and general construction, railroad transportation, and shipbuilding; Mines and mining; Office employees; Slaughtering and meat packing; Street railways; Textiles and clothing; Water transportation.

Since July, 1915, the bureau has published the Monthly Labor Review, which contains special articles on important phases of the labor question, summary reports of investigations by the bureau, and current labor news and information, e. g., prices and cost of living, wages and hours of labor, minimum wage, labor organizations and agreements, awards, and decisions, employment and unemployment, women in industry, housing, industrial hygiene, accidents, workmen's compensation, labor laws and court decisions, strikes and lockouts, and what State labor bureaus are doing.

Analyses of the data collected in the cost-of-living survey conducted by the bureau during the fall and winter of 1918-19 were

published in articles by Royal Meeker, W. F. Ogburn, and others in the *Monthly Labor Review*, July–December, 1919, and July, 1920. Studies of labor turnover by P. F. Brissenden and E. Frankel were printed in the issues of January–May, November, December, 1919, and June, 1920. Other special articles on the following personnel topics appeared in the numbers indicated: Disability among wage earners, by Boris Emmet (November, 1919; March, 1920); Shop committees, by A. L. Whitney (November, 1919); A rest day in continuous-operation industry, by F. C. Croxton (February, 1920); A Federal personnel policy, by W. E. Mosher (July, 1920); Separations from the Government service, by M. Conyngton (December, 1920); Tonnage output per pick miner per day in bituminous coal fields, by Ethelbert Stewart (February, 1921); Industrial absenteeism, by R. S. Quinby (October, 1921). Recent papers dealing with industrial hygiene and occupational diseases include: Opportunities for the study of industrial medicine in the United States, by A. Shuford (May, 1920); Cost of occupational diseases under workmen's compensation acts in the United States, by C. Hookstadt (February, 1921); Occupational poisoning, by W. H. Rand (February, 1921).

CHILDREN'S BUREAU.

Twentieth and D Streets NW., Washington, D. C. Miss Grace Abbott, chief.

Established by act of Congress approved April 9, 1912, the Children's Bureau is directed "to investigate and report * * * upon all matters pertaining to the welfare of children and child life," including "dangerous occupations, accidents and diseases of children, employment."

In its series of Publications, besides a compilation of child-labor laws (No. 10) and reports on their administration dealing with the employment certificate system of Connecticut (No. 12), New York (No. 17), Maryland (No. 41), Wisconsin (No. 85), and the administration of the first Federal child-labor law (No. 78), the bureau has published the following special studies:

No. 74. Industrial instability of child workers. A study of employment certificate records in Connecticut, by R. M. Woodbury. 1920. 86 p.

No. 79. Physical standards for working children. Preliminary report of the committee appointed by the Children's Bureau to formulate standards of normal development and sound health for the use of physicians in examining children entering employment and children at work. 1921. 24 p.

A summary of a study of the working children of Boston by Helen Sumner Woodbury, dealing with the character, conditions, and effects of employment of children under 16 years of age, was published in the *Monthly Labor Review*, U. S. Bureau of Labor Statistics, v. 12, No. 1, January, 1921, p. 45–59.

The bureau has in progress studies of (1) occupations open to minors, their educational requirements for entrance, and the opportunities which they offer for advancement; (2) methods of juvenile guidance and placement. Under the latter, a field survey of methods of vocational guidance, juvenile placement, and supervision of working children in 15 or 20 typical cities is to be undertaken by the bureau in the fall of 1921 in cooperation with the Junior division of the United States Employment Service. The trustees of the National

Vocational Guidance Association are serving as an advisory committee in connection with this project.

Investigations planned for the near future cover: (1) The relation between occupation and physical development and health of working boys and girls of different ages in selected employments; (2) the accident risk of different occupations with special reference to age.

WOMEN'S BUREAU.

Twentieth and D Streets NW., Washington, D. C. Miss Mary Anderson, director.

Organized as the "Woman in Industry Service" in July, 1918, during the war emergency, to serve as a policy forming and advisory body; established as a permanent bureau by act of Congress approved June 5, 1920, "to formulate standards and policies which shall promote the welfare of wage-earning women, improve their working conditions, increase their efficiency, and advance their opportunities for profitable employment," and "to investigate and report upon all matters pertaining to the welfare of women in industry."

The publications which have been issued by the bureau consist of annual reports of the director, a series of Bulletins (Nos. 1 to 17, 1919-1921), and charts of labor legislation affecting woman workers. The bulletins include, besides studies of labor laws (Nos. 2, 5, 6, 7, 16) and standards for employment of women in industry (No. 3), the following reports of special investigations:

No. 1. Proposed employment of women during the war in the industries of Niagara Falls. 1918. 16 p. (From Monthly Labor Review, U. S. Bureau of Labor Statistics, June, 1919.)

No. 4. Wages of candy makers in Philadelphia in 1919. 1919. 46 p.

No. 8. Women in the Government service, by Bertha M. Nienburg. 1919. 37 p. (Analysis of examinations open to women, appointments, and salaries of women as compared with men.)

No. 9. Home work in Bridgeport, Conn. 1919. 35 p. (Deals with corset and garter making.)

No. 10. Hours and conditions of work for women in industry in Virginia. 1920. 32 p. (Survey made at the request of the governor.)

No. 11. Women street-car conductors and ticket agents. 1920. 86 p. (Survey in Detroit, Kansas City (Mo.), Boston, and Chicago; women's hours and conditions of work compared with men's.)

No. 12. New position of women in American industry. 1920. 158 p. (Survey made under the war-work council of the Y. W. C. A.)

No. 13. Industrial opportunities and training for women and girls. 1920. 48 p. (Covers 100 schools in 20 States.)

No. 14. A physiological basis for the shorter working day for women, by George W. Webster. 1921. 20 p.

No. 15. Some effects of legislation limiting hours of work for women. 1921. 26 p. (A comparison of the effect of the Massachusetts 48 hours with the New Jersey 60 hours.)

No. 17. Women's wages in Kansas. 1921. 104 p. (Survey of hours, wages, and conditions of work of women in selected industries in 31 cities made in cooperation with the Kansas Industrial Welfare Commission.)

Preliminary report of a survey of wages, hours, and conditions of work of women in industry in Georgia. 1921. 63 p.

Similar local investigations of women in industry undertaken by the bureau are in progress in Ohio (hours and working conditions), Minnesota (wages and hours), Rhode Island (wages and hours), Manchester, N. H. (dependency of 500 families on woman

workers, stability of women employees, continuity of employment and unemployment).

A survey of Negro women in industry was made by this bureau December, 1918, to June, 1919, and a summary of the data secured is included in the second report of the Division of Negro Economies (see v. *infra*).

UNITED STATES EMPLOYMENT SERVICE.

Twentieth and C Streets NW., Washington, D. C. Francis I. Jones, director general.

A public employment service was organized in a limited way in the Bureau of Immigration in 1907, under the direction of its Division of Information. This was developed from 1914 to 1917 under the present name and in December, 1917, was separated from the Bureau of Immigration and made a service in the office of the Secretary of Labor.

A plan for classifying adults, registered with the Service, by the use of a modification of the army trade tests was tried out experimentally in the New York office, 1184 Broadway, during the first three months of 1919; but reduction of the appropriations for conducting the Service made it necessary to discontinue the work.

JUNIOR DIVISION.—Miss Mary Stewart, director. This division deals with the youth of the country, both sexes, between legal working age and twenty-one. Its purpose is (a) to aid the schools of the country in assisting their charges to select and to prepare for some definite occupational responsibility in which they may be efficient, productive, and constructive workers; (b) to do everything possible to secure for them the type of position in which they may utilize their abilities to the best possible advantage; (c) to afford the type of employment supervision which will encourage efficiency, full development of abilities, adaptability, and stability. The work is carried on in cooperation with local educational authorities, the national office furnishing leadership and advice in analyzing local demands and in perfecting an organization best fitted to local needs. Further information is given in "Policies, development plans, and analysis of positions," a mimeographed bulletin issued January, 1921.

With the assistance of special experts, the division has prepared and issued in mimeographed form, April, 1921, "An information course in vocational guidance and placement for normal schools and colleges" (15 p.).

WAR SERVICES (now discontinued).

DIVISION OF NEGRO ECONOMICS.—This division was formed by the Secretary of Labor in May, 1918, to advise the department on matters relating to Negro wage earners and to outline and promote plans for greater cooperation between Negro wage earners, white employers, and white workers in agriculture and industry, particularly during the war emergency. It was discontinued as a separate division July, 1921. Two publications giving the results of its investigations have been issued, viz.:

Negro migration in 1916-17. 1919. 158 p.

The Negro at work during the World War and during reconstruction; statistics, problems, and policies relating to the greater inclusion of Negro wage earners in American industry and agriculture. 1921. 144 p. (Contains the results of comparative studies of white and colored workers.)

TRAINING SERVICE.—During 1919 this service under the Office of the Secretary issued a series of Training Bulletins, as follows:

- No. 1. How to start a training department in a factory. 24 p.
- No. 2. A successful apprentice toolmaker's school. 8 p.
- No. 3. British methods of training workers in war industries. 68 p.
- No. 4. Training employees for better production. 29 p.
- No. 5. Training labor for peace time. 12 p.
- No. 6. Labor turnover and industrial training. 7 p.
- No. 7. Industrial training and foreign trade. 12 p.
- No. 8. Some advantages of industrial training. 12 p.
- No. 9. Seven million candidates for training. 15 p.
- No. 10. A business man's experience with industrial training. 12 p.
- No. 11. Efficient training in a large plant. 13 p.
- No. 12. How training departments have bettered production—a symposium. 24 p.
- No. 13. Training in representative industries. 15 p.
- No. 14. Training in industrial plants. 30 p.
- No. 15. Training in the paper box industry. 75 p.
- No. 16. Training in men's suit and overcoat industry. 83 p.
- No. 17. Training workers in the women's cloak and skirt industry. 83 p.
- No. 18. Industrial training in the overall industry. 57 p.
- No. 19. Training for shirt makers. 59 p.
- No. 20. Training in the rubber industry. 75 p.
- No. 21. Training in the leather shoe industry. 61 p.
- No. 22. Course of instruction in piano making. 65 p.
- No. 23. Outline courses for instruction in lithography and photolithography. 23 p.
- No. 24. Industrial training for foundry workers. 68 p.
- No. 25. A course of instruction for workers in the cotton mills. 64 p.
- No. 26. The foreman. 79 p.

WORKING CONDITIONS SERVICE.—This service was organized in three divisions: (1) Industrial hygiene and medicine, consisting of personnel detailed from the U. S. Public Health Service, (2) Labor administration, (3) Safety engineering. The scope, functions, and activities of this service are described in its report for the fiscal year ended June 30, 1919 (35 p.), and a pamphlet entitled "Treatment of industrial problems by constructive methods" (15 p.); also in the House hearings on the sundry civil appropriation bill for 1920 (p. 1527-1551). It was discontinued July 1, 1919, through failure of appropriations. The results of two special studies were published as follows:

- Investigation into dermatic effect and infective character of a lubricating compound, by F. E. Deeds. 1919. 8 p.
- Safeguarding workers in the tanning industry, by R. S. Bonsib. 1919. 121 p.

(b) IN OTHER EXECUTIVE DEPARTMENTS, BOARDS, AND COMMISSIONS.

BUREAU OF CHEMISTRY.

United States Department of Agriculture, Washington, D. C.
D. J. Price, engineer in charge of grain-dust explosion investigations.

Since 1913 the Bureau of Chemistry has been making studies of the causes of dust explosions in grain elevators, feed, cereal and flour mills, starch factories, sugar refineries, and other industrial plants which handle grain, and has developed and tested effective preventive methods. Field investigations of mill, elevator, and thrashing-machine explosions have been made. An experimental

attrition mill was erected at Pennsylvania State College in 1915 and experiments on grain-dust explosions have been conducted there under a cooperative agreement between the Department of Agriculture and the college. Large scale tests have been made at the testing station of the Bureau of Mines at Bruceton, Pa., in the large steel gallery used for experiments on the inflammability of coal dusts.

An extensive educational campaign for the prevention of grain-dust explosions was inaugurated in the fall of 1917 by the United States Department of Agriculture and the United States Food Administration. The United States Grain Corporation assumed financial control of this campaign in July, 1919.

A preliminary report on the explosibility of grain dusts, by D. J. Price and H. H. Brown, containing the results of the first investigation made in cooperation with the United States Bureau of Mines and the millers' committee of Buffalo, N. Y., was published by that committee in 1914 (now out of print). The later work is described in the following publications:

Price, D. J., and McCormick, E. B. Dust explosions and fires in grain separators in the Pacific Northwest. 1916. (U. S. Department of Agriculture, Bulletin 379.)

Dedrich, B. W., Fehr, R. B., and Price, D. J. Grain-dust explosions; investigation in the experimental attrition mill at Pennsylvania State College. 1918. (U. S. Department of Agriculture, Bulletin 681.)

Roethe, H. E., and Bates, E. N. The installation of dust-collecting fans on thrashing machines for the prevention of explosions and fires and for grain cleaning. 1920. (Department Circular 98.)

United States Grain Corporation. Grain-dust explosion prevention. New York, 1920.

— Proceedings of conference of men engaged in grain-dust explosion and fire-prevention campaign, New York, April 22-24, 1920. New York, 1920.

Circulars, posters, etc., for use in educational campaign.

The Bureau of Chemistry has also made investigations of cotton-gin fires and has found the main cause of ignition is static electricity. It has prepared a circular describing methods for preventing such fires (Department Circular 28).

BUREAU OF EDUCATION.

Pension Building, Washington, D. C. John James Tigert, commissioner.

Special studies on educational subjects by its own staff and other specialists are published by this bureau in its series of bulletins. These have included local studies of industrial education in the United States, e. g., at Columbus, Ga. (1913, No. 25), Worcester, Mass. (1913, No. 17: A trade school for girls), Cleveland, Ohio (1913, No. 39), and Wilmington, Del. (1918, No. 25); reports on vocational and higher technical education in foreign countries (1913, No. 54; 1914, No. 23; 1915, No. 33; 1917, No. 11); papers on vocational secondary education (1916, No. 21) and vocational guidance (1914, No. 14; 1918, Nos. 19, 24) in the public-school systems; teaching English to the foreign born (1919, No. 80) and training teachers for Americanization (1920, No. 12); and the following issues dealing with various systems of training and with education for particular occupations:

1908, No. 6. The apprenticeship system in its relation to industrial education, by Carroll D. Wright.

1913, No. 50. The Fitchburg plan of cooperative industrial education, by M. R. McCann.

1916, No. 34. Service instruction of American corporations, by L. F. Fuld.

1916, No. 37. Cooperative system of education, by C. W. Park.

1909, No. 10. Education for efficiency in railroad service, by J. S. Eaton.

1917, No. 9. Department-store education, by Helen R. Norton.

Some of the effects of a system of industrial espionage, discovered in the course of an investigation of the problem of adult education in Passaic, N. J., by Mrs. A. B. Fernandez, are described in her report published as Bulletin 1920, No. 4.

During 1919-20, six numbers of a series of Industrial education circulars were issued:

No. 1. Lessons from the war and their application in the training of teachers.

No. 2. The cooperative school.

No. 3. Industrial art a national asset.

No. 4. The Army trade tests.

No. 5. Progress in the preparation of industrial teachers.

No. 6. Examples of good teaching in industrial education.

Nos. 1 and 5 are reports of conferences of men from institutions in the Mississippi Valley engaged in training teachers of the manual arts and industrial education, December, 1918, and December, 1919; and Nos. 4 and 6 are reports of conferences of specialists in industrial education, February, 1919, and February, 1920. The conferences were called by the United States Commissioner of Education.

Bibliographies of industrial, vocational, and trade education have been issued as Bulletin 1913, No. 22, and Library Leaflet No. 7. Current titles are included in the "Monthly record of educational publications" which is published in the bulletin series.

BUREAU OF EFFICIENCY.

Winder Building, Seventeenth and F Streets, Washington, D. C.
Herbert D. Brown, chief.

Established as a division of the Civil Service Commission by authority of the legislative, executive, and judicial appropriation act approved March 4, 1913 (37 Stat. 750); made an independent establishment under present name by the urgent deficiency appropriation act approved February 28, 1916 (39 Stat. 15).

The duties of the Bureau of Efficiency are to establish and maintain a system of efficiency ratings for the executive departments in the District of Columbia; to investigate the needs of the several executive departments and independent establishments with respect to personnel; and to investigate duplication of statistical and other work and methods of business in the various branches of the Government Service.

The first personnel work undertaken by the bureau was the establishment of a system of efficiency rating in the Division of Dead Letters of the Post Office Department. This system, developed and extended so as to be applicable to other classes of work, was established experimentally throughout the entire Post Office Department in December, 1914, and formally promulgated by Executive order of June 23, 1915. A description of the procedure followed in rating efficiency, the text of this order and the forms used are printed in the report of the bureau for the period from March 25, 1913, to October 13, 1916. During this period informal ratings were made in

the office of the Treasurer of the United States, the National Bank Redemption Agency, the State Department, Bureau of Supplies and Accounts of the Navy Department. In 1919 an efficiency record section was created in the Division of Loans and Currency of the Treasury Department, and two systems for obtaining ratings were subsequently developed so as to include all employees of that office, one applying to work susceptible of precise measurement and the other to work not measurable in quantitative units. In 1920 the system was also put into operation in the office of the Register of the Treasury. By Executive order of October 24, 1921, the bureau was directed by the President to prescribe a system of rating the efficiency of employees throughout the classified service.

The bureau operated a training school for correspondence clerks in the Bureau of War Risk Insurance during 1918 and assisted with the establishment of a school for training revenue collectors in the Bureau of Internal Revenue. In June, 1919, an investigation of the desirability of establishing a training school for Federal employees in the District of Columbia was undertaken. A report on this subject and recommendations with respect to the conduct of such a school were transmitted to the Senate March 3, 1920, and printed as Senate Document No. 246 of the Sixty-sixth Congress, second session.

An investigation of the methods and procedure of the Civil Service Commission, authorized by the legislative, executive, and judicial appropriation act of March 3, 1917 (39 Stat. 1080), has recently been completed and a report is to be submitted to Congress in the near future discussing all phases of the work of the commission, including methods of recruiting candidates, examinations, ratings, and certifications, with recommendations for changes in policy and practice which, in the opinion of the bureau, would enable the commission to perform more efficiently its primary function, that of an employment department for the Government service.

By the same act of Congress the bureau was directed to make an investigation of the classification, salaries, and efficiency of Federal employees in the District of Columbia and a comparison of the rates of pay of employees of the Federal Government with those of State and municipal governments and commercial institutions performing similar services. This work, suspended during the war and again during the life of the Joint Commission on Reclassification of Salaries,¹ was resumed at the beginning of 1920 at the direction of members of the House Committee on Appropriations. A brief classification of Government positions has been made and ranges of pay have been suggested for each class.²

Prior to the passage of the retirement act of 1920 the bureau collected elaborate statistics on the personnel of the Government service and from these made actuarial calculations for the Senate Committee on Civil Service and Retrenchment as to the cost of retiring civil employees of the Government under the various plans proposed.

¹ The report of this Joint Commission, created Mar. 1, 1919, by section 9 of the legislative, executive, and judicial appropriation act for 1919-20, submitting a classification of positions on the basis of duties and qualifications, and schedules of compensation for the respective classes (197, 884 p.), was printed as House Doc. 680, 66th Cong., 2d ses.

² Incorporated in one of the pending reclassification bills, viz: H. R. 2921, 67th Congress. A different plan, the Lehlbach-Sterling bill (H. R. 8928), was, however, reported by the House Committee on Reform in the Civil Service, Nov. 3, 1921.


BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

Department of Commerce, Washington, D. C. Philip B. Kennedy, director.

This bureau has cooperated with the Federal Board for Vocational Education in the preparation and publication of texts and educational guides on training in foreign commerce and shipping, which have been issued in its Miscellaneous Series, as follows:

- No. 81. Selling in foreign markets. 1919. 638 p.
- No. 85. Paper work in export trade. 1920. 152 p.
- No. 97. Training for foreign trade. 1919. 195 p.
- No. 98. Training for the steamship business. 1920. 49 p.

BUREAU OF MINES.

Department of the Interior, Washington, D. C.  H. Foster Bain, director.

Established by act of Congress, approved May 16, 1910 (37 Stat. 681), this bureau is authorized to conduct investigations designed to improve health and safety in the mineral industry, and to promote efficient development and utilization of mineral resources. Its work is organized under (a) the investigations branch, consisting of the technical divisions of mining, mineral technology, fuels, metallurgy, petroleum and natural gas, and the division of mining experiment stations; (b) the operations branch, including the divisions of office administration, education and information, mine-rescue cars and stations, explosives, and the Government fuel yard. The principal experiment station and central laboratories are at Pittsburgh, Pa.; other experiment stations are located at Bartlesville, Okla. (petroleum); Berkeley, Calif.; Columbus, Ohio (ceramics); Fairbanks, Alaska; Golden, Colo.; Minneapolis, Minn.; Salt Lake City, Utah; Seattle, Wash.; Tucson, Ariz.; Urbana, Ill.; and appropriations have been made for two new mining experiment stations, which will serve the Birmingham (Ala.) and St. Louis (Mo.) districts. The bureau has an experimental mine at Bruceton, Pa., for explosion tests, etc. Investigations are also carried on under cooperative agreements with various State universities, mining schools, bureaus and commissions, and other agencies. Each annual report of the director contains a record of investigations completed or in progress.

For purposes of safety work the country is divided into nine safety districts, each with a district engineer in charge; and the bureau maintains in them 10 mine-rescue cars and 9 safety stations, which render aid at mine disasters, and at which about 10,000 miners each year are trained in first-aid and mine-rescue methods.

The publications of the bureau are the Bulletins and the Technical Papers (containing the results of investigations), the Miners' Circulars (written in nontechnical English and dealing with accident prevention, rescue and first-aid methods, the safeguarding of health, and other topics that directly concern the workers in mines, mills, and metallurgical plants), the annual reports of the director, and miscellaneous handbooks on special subjects, posters, charts, and schedules. A printed list of them may be obtained on application. A mimeographed series of brief reports, presenting results of minor investigations on special phases of major investigations, is also issued and distributed to the technical press and to Government organizations, companies, or individuals interested.

Among the studies which have been published as Bulletins or Technical Papers are many dealing with mine hazards, rescue and first-aid training for miners, health and safety conditions in mines, quarries, and metallurgical plants, explosives and equipment used in mines and quarries, and related subjects, viz:

Coal dust, explosion tests, etc. (Bulletins Nos. 20, 50, 56, 102, 141, 167).

Mine gases, explosibility, etc. (Bulletins Nos. 42, 72, 195; Technical Papers Nos. 39, 43, 119, 121, 134, 150, 190); ignition by incandescent lamps (Bulletin No. 52; Technical Papers Nos. 23, 28).

Prevention of explosions (Technical Papers Nos. 21, 56, 84).

Safety of mine electrical equipment (Bulletin Nos. 46, 68; Technical Papers Nos. 19, 44, 75, 101, 138); of other equipment and operations (Bulletins Nos. 57, 74; Technical Papers Nos. 103, 228, 237).

Accident prevention in metal mines (Technical Papers Nos. 30, 229); use of stenchers as warnings (Technical Paper No. 244).

Safety in stone quarrying (Technical Paper No. 111).

Mine rescue and first aid, gas masks, etc. (Bulletin No. 62; Technical Papers Nos. 82, 248); carbon monoxide detection and effects (Technical Papers Nos. 11, 62, 122); Report of the committee on resuscitation from mine gases (Technical Paper No. 77). *See also* Yale University, laboratory of applied physiology (p. 197).

Occupational diseases: Miner's nystagmus (Bulletin No. 93); pulmonary diseases due to rock dust in metal mines (Bulletin No. 132; Technical Papers Nos. 105, 260); control of hookworm infection (Bulletin No. 139).

Blast furnaces, hazards, and accident prevention (Bulletins Nos. 130, 140; Technical Paper No. 136); asphyxiation by blast-furnace gas (Technical Paper No. 106).

Steel plants, health conservation (Technical Paper No. 102); dust hazards (Technical Paper No. 153); carbon monoxide poisoning (Technical Paper No. 156).

Explosibility of acetylene (Technical Paper No. 112); inflammability of aluminum dust (Technical Paper No. 152); gasoline hazards (Technical Papers Nos. 115, 127).

Also accident statistics for coal mines, coke ovens, metal mines, quarries, and metallurgical works.

As the result of 13 years' experience in testing and in assisting manufacturers to develop explosives which offer the minimum hazard, when properly used, in gaseous and dusty mines, the bureau has prepared standard specifications for the testing and use of permissible explosives for use in mines (schedule 17), which have recently been submitted to the American Engineering Standards Committee for approval as "tentative American standard."

BUREAU OF STANDARDS.

Washington, D. C. S. W. Stratton, director.

In 1913, under authorization of Congress, this bureau began the study of the hazards of electrical practice, and from the start has had the active cooperation of all the interests concerned. This has involved not only the study of existing requirements on electrical construction embodied in State statutes, commission orders, city ordinances, company specifications, technical association reports, and regulations in force in foreign countries, and of current electrical practice, but also a series of investigations covering such matters as strength of splices in wires, strength of poles, weather conditions in different parts of the country, shielding effect of wires upon others mounted on the same line, methods of making ground connections, resistances of various types of ground in various soils, preservative treatment of wood and its effect upon conductivity, etc.

Two tentative editions of the National Electrical Safety Code issued in 1914 and 1916 as Circular No. 49 and Circular No. 54 were superseded in 1921 by the third edition published as Handbook Series No. 3. This has been submitted to the American Engineering Standards Committee for approval, the Bureau of Standards having been assigned the sponsorship for the electrical safety code in the safety program of that committee. (See p. 73.) It consists of parts 1 to 3, dealing respectively with installation and maintenance of (1) electrical supply stations and substations, (2) overhead and underground supply and signal lines, (3) utilization equipment; part 4, rules for the operation of equipment and lines; and supplementary sections which include rules for protective grounding of equipment and circuits. The discussion of the rules which accompanied them in the second edition has been omitted and is to appear considerably amplified in a separate publication, Handbook Series No. 4, now in press. Circular No. 72 (1918), entitled "Scope and application of the national electrical safety code," gives further details of its preparation, describes typical accidents, suggests procedure of inspections, and summarizes the rules. The researches on ground connections for electrical systems were published as Technologic Paper No. 108.

In 1918 the bureau cooperated with the safety engineers of the War and Navy Departments in the preparation of a set of safety standards to be applied in the Government establishments. Among these standards was one for head and eye protection, which was further developed through study and experimental work at the bureau and conferences with other parties who had had experience in eye protection, and then revised in 1920 by an advisory committee organized for the purpose. It has now been published under the title "National safety code for the protection of the heads and eyes of industrial workers," as Handbook Series No. 2 (1921); and having been developed by an organization and procedure substantially in conformity with the rules of the American Engineering Standards Committee, it has been approved as "recommended American practice" by that committee, which had previously recognized the bureau as sponsor for this safety code.

The bureau is also sponsor for the safety code for logging and sawmill operations and has organized the sectional committee representing the different interests concerned and prepared the first draft. It is joint sponsor for several other codes in preparation under the auspices and rules of procedure of the American Engineering Standards Committee (see p. 74), viz, the gas safety code, for which it has made a number of investigations relating to the use of illuminating gas; the safety code on aeronautics; the code for lightning protection, on which subject it had previously published investigations in Technologic Paper No. 56. It is a member of the Electrical Safety Conference (see p. 100), which is sponsor for the safety code on electrical power control and engaged in the development of other safety standards also.

In connection with the elevator code recently compiled by the American Society of Mechanical Engineers (see p. 81) the bureau made a survey of field conditions with respect to elevator interlocks and has prepared a report on the subject which it expects to publish.

It is cooperating with several State commissions in the preparation of safety rules and has representatives on the sectional committees developing safety codes for which various technical associations are sponsors.

CIVIL SERVICE COMMISSION.

1724 F Street NW., Washington, D. C. John T. Doyle, secretary; Herbert A. Filer, chief examiner.

The chief examiner's office has recently given special attention to modification of the examination for departmental clerk, so as to reduce the time occupied by the examiners in handling and rating the papers and thus the cost of the examination without interfering with its efficiency as a test of fitness for the clerical service. This has been accomplished partly by mechanical adjustment (i. e., size of papers, methods of handling, etc.) and partly by changing the character of some of the tests, e. g., arithmetic. In regard to the technical examinations, the consultant expert retained by the commission for this investigation has advised against the use of trade tests under present conditions.

During 1918-19 the Army alpha psychological test was given to 105 of the commission's employees and the results compared, in charts and tables, with the grades attained by these employees in the commission's examinations and with the efficiency ratings of these persons as reported by their chiefs of division. Facing a large reduction of its staff July 1, 1921, due to a cut of \$60,000 in the appropriation for the fiscal year 1921-22, the commission used the graphic rating scale, devised by the Scott Co., as an aid to eliminating the least efficient of its employees at that time.

The thirty-seventh annual report for the fiscal year ended June 30, 1920, includes a survey of employment conditions in the Federal civil service (p. xx-xxvii) and an account of the special method adopted in applying the merit principle to the selection of postmasters (p. xxxiii-xxxv).

FEDERAL BOARD FOR VOCATIONAL EDUCATION.

Washington, D. C. Lewis H. Carris, administrative head.

Created by the act of Congress, approved February 23, 1917, which provided Federal aid for vocational schools and classes and teacher training carried on under the direct supervision or control of State boards of vocational education, in accordance with plans approved by the Federal board. Its primary function is the administration of this act. In addition, it is charged with the promotion of vocational rehabilitation of persons disabled in industry under the act of Congress, approved June 2, 1920. By each of these acts the board is authorized to make studies, investigations, and reports.

The duty of directing the vocational rehabilitation and return to civil employment of disabled soldiers, sailors, and marines, imposed by the act of June 27, 1918, was transferred to the Veterans' Bureau by the act of Congress creating that bureau, approved August 9, 1921.

The first studies issued by the board in its bulletin series dealt with emergency war training courses as follows:

Bulletin No. 2. Training conscripted men for service as radio and buzzer operators (international code) in the United States Army. 1917. 14 p.

Bulletin No. 3. Emergency training in shipbuilding—evening and part-time classes for shipyard workers. 1918. 72 p. (Contains job analyses for shipyard occupations and comparisons with kindred trades.)

Bulletin No. 4. Mechanical and technical training for conscripted men (Air Division, U. S. Signal Corps.) 1918. 47 p.

Bulletin No. 7. Emergency war training for motor-truck drivers and chauffeurs. 1918. 75 p.

Bulletin No. 8. Emergency war training for machine-shop occupations, blacksmithing, sheet-metal working, and pipe fitting. 1918. 48 p.

Bulletin No. 9. Emergency war training for electricians, telephone repairmen, linemen, and cable splicers. 1918. 31 p.

Bulletin No. 10. Emergency war training for gas-engine, motor-car, and motor-cycle repairmen. 1918. 79 p.

Bulletin No. 11. Emergency war training for oxyacetylene welders. 1918. 86 p.

Bulletin No. 16. Emergency war training for radio mechanics and radio operators. 1918. 75 p.

During the war a number of Government agencies combined to carry on the training of employment managers under the immediate direction of the War Industries Board. When the latter was discontinued December 31, 1918, provision was made by the President, from the appropriation for national security and defense, for the continuation of this work under the auspices of the Federal Board for Vocational Education until July 1, 1919. Subsequently, nine bulletins dealing with certain phases of employment management were published, forming the following series:

Employment Management Series.

No. 1. Employment management: its rise and scope. The organization of an employment department. By Boyd Fisher and Edward D. Jones. 1920. 34 p. (Bulletin No. 50.)

No. 2. The selection and placement of employees. By Philip J. Reilly. 1919. 84 p. (Bulletin No. 49.)

No. 3. Job specifications. By Franklyn Meine. 1919. 64 p. (Bulletin No. 45.)

No. 4. Employment management and industrial training. By Roy W. Kelly. 1919. 107 p. (Bulletin No. 48.)

No. 5. The wage-setting process. By Alfred B. Rich. 1919. 32 p. (Bulletin No. 44.)

No. 6. The turnover of labor. By Boris Emmet. 1919. 60 p. (Bulletin No. 46.)

No. 7. Industrial accidents and their prevention. By R. R. Ray. 1919. 66 p. (Bulletin No. 47.)

No. 8. The labor audit: a method of industrial investigation. By Ordway Tead. 1920. 48 p. (Bulletin No. 43.)

No. 9. Bibliography of employment management. By Edward D. Jones. 1920. 119 p. (Bulletin No. 51.)

The results of the research work undertaken to promote the efficiency of trade and industrial education are made available to the States through regional conferences held annually with representatives of State boards and through the publication of bulletins. The special types of service to State boards, as described in the fourth annual report, 1920 (p. 28-40), includes studies of training of trade and industrial teachers, and development of methods of educational trade analysis, effective programs for foremen's conferences, and methods of conducting local surveys. Short training courses on these subjects have been given at the regional conferences. The bulletins containing results of studies in this field constitute the following subseries.

Trade and Industrial Series.

No. 1. Trade and industrial education—organization and administration. 1918. 125 p. (Bulletin No. 17.)

No. 2. Evening industrial schools. 1918. 53 p. (Bulletin No. 18.)

No. 3. Part-time trade and industrial education. 1918. 52 p. (Bulletin No. 19.)

No. 4. Buildings and equipment for schools and classes in trade and industrial subjects. 1918. 77 p. (Bulletin No. 20.)

No. 5. Evening and part-time schools in the textile industry in the Southern States. 1919. 106 p. (Bulletin No. 30.) Contains job analyses of textile occupations.

No. 6. Training courses in safety and hygiene in the building trades. 1919. 128 p. (Bulletin No. 31.)

No. 7. Foreman training courses, Parts I and II. 1919. 2 v. (Bulletin No. 36.) Based on an experiment in foreman training conducted in cooperation with an industrial plant.

No. 8. General mining. 1919. 169 p. (Bulletin No. 38.) Includes analyses of mining occupations, routes for promotions, mining schools, outlines of courses, etc.

No. 9. Coal-mine gases. 1919. 36 p. (Bulletin No. 39.)

No. 10. Coal-mine timbering. 1919. 103 p. (Bulletin No. 40.)

No. 11. Coal-mine ventilation. 1919. 63 p. (Bulletin No. 41.)

No. 12. Safety lamps, including flames, safety lamps, and approved electric lamps. 1919. 72 p. (Bulletin No. 42.)

No. 13. Theory and practice. Outlines of instruction in related subjects for the machinist's trade, including general trade subjects for certain other occupations. 1919. 127 p. (Bulletin No. 52.) Includes analysis of machinist's trade (p. 15-47.)

No. 14. Compulsory part-time school attendance laws. 1920. 95 p. (Bulletin No. 55.)

No. 15. Trade and industrial education for girls and women. 1920. 106 p. (Bulletin No. 58.)

No. 16. Foremanship courses vs. instructor-training courses. 1921. 15 p. (Bulletin No. 60.)

No. 17. Improving foremanship: trade extension courses for foremen. 1921. 42 p. (Bulletin No. 61.)

No. 18. Instructor training, instructor-training courses for trade teachers and for foremen having an instructional responsibility. 1921. 43 p. (Bulletin No. 62.)

No. 19. Bibliography on vocational guidance: A selected list of vocational guidance references for teachers. 1921. 35 p. (Bulletin No. 66.)

No. 20. A survey and analysis of the pottery industry. 1921. 88 p. (Bulletin No. 67.)

No. 21. An analysis of the railway boilermaker's trade. 1921. 24 p. (Bulletin No. 69.)

In the field of training for mercantile occupations some of the studies made have been issued in the following subseries of bulletins:

Commercial Education Series.

No. 1. Retail selling. By Mrs. L. W. Prince. Rev. ed. 1919. 103 p. (Bulletin No. 22.)

No. 2. Vocational education for foreign trade and shipping. 1918. 85 p. (Bulletin No. 24.)

No. 3. Commercial education—organization and administration. 1919. 67 p. (Bulletin No. 34.)

No. 4. Survey of junior commercial occupations. 1920. 77 p. (Bulletin No. 54.) Contains job analyses of 26 occupations, promotional lines, etc.

A revised edition of Bulletin No. 24 on "Training for foreign trade," a bulletin on "Training for the steamship business," and a text for use in teaching, "Paper work in export trade," prepared by the Federal Board, have been published by the Bureau of Foreign

and Domestic Commerce as Nos. 97, 98, and 85, respectively, of its miscellaneous series.

During 1918-1920 the board issued three series of studies in connection with the vocational rehabilitation of disabled soldiers, sailors, and marines, viz:

Reeducation Series, Nos. 1-8 (Bulletins Nos. 5, 6, 15, 25, 29, 32, 33, 59), of which the last four deal with tuberculous cases and were prepared with the assistance of the National Tuberculosis Association (see p. 137).

Rehabilitation Monographs, Joint Series, Nos. 1-67, consisting of unit courses of instruction in various school and trade subjects, issued in cooperation with the Surgeon General's Office, the Bureau of Medicine and Surgery (Navy Department), and the Bureau of War Risk Insurance.

Opportunity Monographs, Vocational Rehabilitation Series, Nos. 1-44, containing descriptions of occupations to aid disabled soldiers, sailors, and marines in choosing a vocation.

The industrial rehabilitation division has thus far been concerned primarily with administration, general policy, and problems arising in connection with the establishment of rehabilitation work for persons disabled in industry in the several States. It has issued three bulletins up to October, 1921, viz:

Industrial Rehabilitation Series: No. 1, A Statement of Policies (Bulletin No. 57); No. 2, General Administration and Case Procedure (Bulletin No. 64); No. 3, Services of Advise ment and Cooperation (Bulletin No. 70).

FEDERAL RESERVE BOARD.

DIVISION OF ANALYSIS AND RESEARCH, 511 Philosophy Hall. One hundred and sixteenth Street, New York, N. Y.—H. Parker Willis, chief. In order to obtain data for ascertaining changes in the cost of living of bank employees, with a view to affording a basis for adjusting salaries accordingly, a questionnaire was prepared by this division and distributed to all employees of Federal reserve banks receiving salaries of less than \$5,000 per annum, requesting certain information relative to either family or individual expenditures for the year 1919. The purpose was to determine the percentage of the total expenditures going toward food, rent, clothing, etc., of a typical family or individual in each salary group, in order to give proper weighting to the price changes reported by the United States Bureau of Labor Statistics at intervals of six months. Five thousand one hundred and twenty returns from 12 Federal reserve districts have been tabulated; the figures for the Federal Reserve Bank of New York are published in an article on the investigation in the Federal Reserve Bulletin for December, 1920 (p. 1293-1295).

GOVERNORS' CONFERENCE, COMMITTEE ON PERSONNEL.—This committee, appointed at the governors' conference with the Federal Reserve Board held at Washington, D. C., April 7 to 10, 1920, has undertaken a survey of the whole field of personnel activities in all of the Federal reserve banks, and also in representative industrial and commercial concerns. Under date of July 15, 1920, it sent out to the banks and through them to a few other concerns in each district a comprehensive questionnaire in the form of a printed pamphlet of 45 pages quarto, in which the questions are classified according to a decimal system in nine groups, with subdivisions. To facilitate comparison of information relating to the same subject from all the banks the instructions provided that the several questions should be answered on separate sheets of standard size, marked with the respective classification numbers. The investigation is being conducted under

the immediate direction of H. A. Hopf, organization counsel, Federal Reserve Bank of New York, room 2524, 15 Nassau Street, New York, N. Y. A report on the material received is to be submitted to the governors' conference, showing the present status of personnel activities in the Federal reserve banks and in other institutions and making constructive recommendations.

INTERSTATE COMMERCE COMMISSION.

Eighteenth Street and Pennsylvania Avenue, Washington, D. C.

BUREAU OF LOCOMOTIVE INSPECTION.—A. G. Pack, chief inspector. This bureau administers the act of February 17, 1911, as amended March 4, 1915, which empowers the commission to inspect and prescribe standards of safety for all parts and appurtenances of the locomotive and tender, including the boiler. Its annual reports contain statistical and other data on accidents and casualties resulting from failures of locomotives and tenders and their appurtenances and on defects found by the inspectors.

As it has been found that fire-box failures, due to crown sheets being overheated, are among the most prolific sources of fatal accidents, and that such failures are frequently due to dependence on gauge cocks to give a correct indication of the height of water, when in fact the true level was much lower, the bureau during the fiscal year 1919-20 made an extensive series of tests for the purpose of determining the action of water in the boiler on the water-indicating appliances, with respect to their correct registration. The results of the experiments made on a number of locomotives of different classes on 14 railroads in various sections of the country are given in the ninth annual report of the bureau, 1920 (p. 8-30).

NAVY DEPARTMENT.

Washington, D. C.

BUREAU OF NAVIGATION.—L. D. Alderman, educational adviser. This bureau has planned and organized on the ships of the Navy an education system intended (1) to assist enlisted men in raising their ratings in the Navy, and (2) to increase the efficiency of enlisted men, whether for naval or civil life. It is carried on according to the self-instruction plan, each subject being taught through a series of lessons. The system has been started by selecting from the courses already prepared by various correspondence schools and university extension divisions those which present the subjects in the most simple and direct manner; and the bureau is now having courses prepared by naval officers and others especially adapted to meet naval needs. The subjects are offered in six courses, viz: Steam engineering, electrical engineering, gas engineering, navigation, ordnance and gunnery, yeomanry. A description of the courses and subjects is published in a pamphlet entitled "United States Navy education system: Announcement of courses" (rev. ed., Jan. 1921).

DEPARTMENTAL WAGE BOARD OF REVIEW.—It is provided by law that the rate of wages of the employees in the navy yards shall conform, as nearly as is consistent with the public interest, with those of private establishments in the immediate vicinity of the respective yards, to be determined by the commandants thereof, subject to the approval and revision of the Secretary of the Navy, who appoints a board of review to advise him. The present board (John K. Robinson, captain, United States Navy, senior member; W. D. Bergman,

chief, appointment division, recorder) on August 31, 1921, issued its "report on the question of wages for civilian employees of naval establishments within continental limits of the United States" based on the recommendations of local wage boards, public hearings, and investigations by its members. An abstract of the report and the schedules of rates of pay, which were approved by the Secretary of the Navy and became effective September 16, are printed in the *Monthly Labor Review* for October, 1921 (pp. 116-127).

POST OFFICE DEPARTMENT.

Eleventh Street and Pennsylvania Avenue, Washington, D. C.

WELFARE DEPARTMENT.—Dr. Lee K. Frankel, welfare director. During the summer of 1921 a national welfare council, composed of representatives elected by the postal employees, was organized to consider matters affecting working conditions, health, and general welfare of employees in post offices, mail trains, steamships, and other divisions of the Postal Service. A model plan for constitution of local welfare councils, to be organized in all cities of sufficient size for the discussion of matters of local interest, has been adopted by the national welfare council and the welfare department and sent out from the office of the Postmaster General, October 26, 1921. It is planned to appoint committees from the permanent councils to study questions of sanitation, lighting, rest rooms, first aid, medical and nursing service, recreation, etc.

The welfare department has recently sent out questionnaires to about 3,000 post offices to obtain preliminary data as to existing working conditions, and about 100 of them have been personally investigated. These questionnaires have been placed in the hands of the post-office inspectors to study the conditions reported and submit recommendations thereon to this department.

UNITED STATES PUBLIC HEALTH SERVICE.

Washington, D. C. Hugh S. Cumming, surgeon general.

DIVISION OF SCIENTIFIC RESEARCH.—Asst. Surg. Gen. J. W. Scherschewsky in charge. Investigations of occupational diseases and industrial hygiene have since 1914 constituted part of the work of this division. They are carried on under the office of industrial hygiene and sanitation either by the regular personnel of the service or by the part-time personnel in connection with certain university medical schools. Statistical studies in connection with these investigations are made by the statistical office of the division and laboratory work is done by the Hygienic Laboratory.

The general policy which has been formulated is that the funds allotted are to be expended in such manner as to make known the hazards of those industries where present information is inadequate; the prevalence of specific hazards from known poisonous elements or compounds; the causative factors of prevalent occupational diseases and in each instance the preventive measures and routine treatment to meet abnormal conditions whenever and wherever found. The general plan of work, which is being followed as far as circumstances permit, is to undertake each year the study of the health hazards of one industry, the hazard distribution of one occupational poison, and the causation, treatment, and prophylaxis of one occupational disease. Investigations are also undertaken in coopera-

tion with State and local authorities to provide data on which to base the administration of State labor laws and for the improvement of the sanitation of industrial communities.

OFFICE OF INDUSTRIAL HYGIENE AND SANITATION.³—The results of some of the principal investigations conducted under the direction of this office have been published in the series of Public Health Bulletins as follows:

No. 71. Studies in vocational diseases: I. The health of garment workers, by J. W. Schereschewsky. II. The hygienic conditions of illumination in workshops of the women's garment industry, by J. W. Schereschewsky and D. H. Tack. 1915. 224 p. [See also No. 81.]

No. 73. Tuberculosis among industrial workers: Report of an investigation made in Cincinnati, with special reference to predisposing causes, by D. E. Robinson and J. G. Wilson. 1916. 143 p.

No. 78. Influence of occupation on health during adolescence: Report of a physical examination of 679 male minors under 18 in the cotton industries of Massachusetts, by M. V. Safford. 1916. 52 p.

No. 81. Studies in vocational diseases. The effect of gas-heated appliances upon the air of workshops, by C. Weisman. 1917. 84 p. [Part of the garment industry investigation.]

No. 85. Miners' consumption: A study of 433 cases of the disease among zinc miners in southwestern Missouri, by A. J. Lanza; with a chapter on roentgen ray findings in miners' consumption, by S. B. Childs. 1917. 40 p.

No. 92. Color blindness: Its relation to other ocular conditions, and the bearing on public health of tests for color sense acuity, by G. L. Collins. 1918. 29 p. [One of a series of illumination and vision studies in Government departments made in 1915-1918.]

No. 99. Studies of the medical and surgical care of industrial workers, by C. D. Selby. 1919. 115 p.

No. 106. Studies in industrial physiology: Fatigue in relation to working capacity. I. Comparison of an 8-hour plant and a 10-hour plant: Report by Josephine Goldmark and M. D. Hopkins on an investigation by P. S. Florence and associates, under the general direction of Frederic S. Lee. 1920. 213 p.

The following is a partial list of the investigations undertaken, with references to the annual reports of the Surgeon General, where they are briefly described, and to the reprints from the Public Health Reports, in which some of the results are published:

(1) Surveys of health hazards of particular industries, viz: Steel plants (annual report, 1914, p. 52; 1915, p. 52; 1916, pp. 46, 48; *see also* United States Bureau of Mines, Technologic Paper No. 102); chemical industry (annual report, 1917, p. 38; 1918, p. 40); textile industry (annual report, 1917, p. 39; 1918, p. 40); illuminating gas manufacture and distribution (annual report, 1917, p. 38; 1918, p. 40); munition plants (annual report, 1918, p. 33); electrochemical and abrasive plants (annual report, 1919, p. 38); pottery industry (annual report, 1919, p. 39; 1920, p. 34); foundry trades (annual report, 1920, p. 33); mining industry, in cooperation with United States Bureau of Mines (annual report, 1914-1920); glass industry (in progress, 1921); dye industry (planned for 1921-22).

(2) Studies of specific health hazards, occupational diseases and poisons, viz: Heat hazard in industries (Reprint No. 441; projected for 1921-22); effect of pneumatic hammers on hands of stone cutters (annual report, 1918, p. 47; Reprint No. 460); dust hazards and air conditioning (annual report, 1919, p. 40; 1920, p. 33; in progress, 1921; Reprint Nos. 509, 530, 585, 616), under the direction of C.-E. A. Winslow, Yale Medical School (*see* p. 198); plumbism (among pottery workers, annual report, 1919, p. 39; 1920, p. 34; glass workers, in progress, 1921; in sundry other trades, e. g., smelting and refining, white-lead works, storage batteries, planned for 1921-22); cutting oil dermatoses among machinists (annual report, 1920, p. 35; in progress, 1921); ink dermatosis among plate

³ From October, 1918, to June 30, 1919, the personnel was detailed to constitute the division of industrial hygiene and medicine of the Working Conditions Service of the Department of Labor (dissolved after the latter date).

and press printers (annual report, 1920, p. 36); tellurium poisoning (annual report, 1920, p. 36; Reprint No. 590).

(3) Studies in industrial fatigue, including field investigations in 8-hour and 10-hour plants, muscle tests, laboratory studies of the chemical phenomena of fatigue, etc. (annual report, 1918, p. 37; 1919, p. 41; 1920, p. 37; in progress 1921; Reprints Nos. 448, 458, 465, 482, 513, 543, 605; Public Health Bulletin No. 16, v. supra; Public Health Reports, 1919, p. 1682; 1920, p. 2445) begun in 1917 in cooperation with the divisional committee on industrial fatigue, Council of National Defense, and continued since the war under the direction of Frederic S. Lee, Columbia University (see p. 176).

(4) Local studies relating to women in industry, viz: Sanitary survey of Indiana industries employing woman labor (Supplement No. 17 to Public Health reports); health conditions surrounding employment of women in Wisconsin (annual report, 1916, p. 44; 1917, p. 36).

STATISTICAL OFFICE.—Edgar Sydenstricker, statistician, in charge. Organized in the winter of 1918–19 to provide a central plant, with experienced personnel and necessary mechanical equipment, for the tabulation of material collected in the field and epidemiological studies carried on by the Public Health Service, to furnish the technical advice required in planning the statistical work and in analyzing the results of such studies and to conduct independently certain statistical studies bearing thereon. Its activities have included compilation and analysis of the morbidity and mortality statistics collected in field investigations of influenza, studies of morbidity reports in cooperation with the Division of Sanitary Reports and Statistics and State and municipal health departments, statistical studies of pulmonary tuberculosis, venereal diseases, and child hygiene, and the organization of industrial morbidity statistics.

The purposes of its work in the field of industrial morbidity statistics are (1) to secure current reports of disease prevalence among wage earners in different plants, industries, and occupations, and (2) to collect data relating to the incidence of disease according to diagnosis among wage earners of different sexes, ages, races, and occupations for the study of the influence of occupational and other conditions. It is believed that when a sufficiently large number of industrial establishments and employees' sick benefit associations cooperate with the Public Health Service in furnishing regular reports of disease prevalence a better basis will be laid by the study of industrial hygiene and for more definitely direct preventive measures. At the present time 45 sick benefit organizations are sending monthly reports and 10 are sending annual or special reports to this office, applying in the aggregate to 158,000 employees.

In addition to statistical studies in its other lines of work, the publications from this office include the following papers dealing with industrial morbidity, which have appeared in the issues of the Public Health Reports indicated by date:

Sickness records for industrial establishments (Nov. 14, 1919; Reprint No. 573). Prepared in cooperation with the committee on industrial morbidity statistics of the section on vital statistics, American Public Health Association (see p. 78).

Keeping tab on sickness in the plant (Apr. 9, 1920, Reprint No. 589).

Sickness and absenteeism during 1919 in a large industrial establishment (Sept. 10, 1920).

Sickness frequency among industrial employees, 1920–21 (Dec. 3, 1920; Mar. 4, July 1, 1921; Reprints No. 624).

Diseases prevalent among steel workers in a Pennsylvania city (Dec. 31, 1920).

Also a series of studies of disabling sickness and pellagra incidence in cotton-mill villages of South Carolina (Nov. 22, 1918; Mar. 19, July 9 and 16, Nov. 12, 1920).

HYGIENIC LABORATORY, Twenty-fifth and E Streets NW., Washington, D. C.—Surg. G. W. McCoy, director. The divisions of chemistry and pharmacology of this laboratory conduct laboratory research required in connection with some of the industrial hygiene investigations undertaken by the United States Public Health Service. This includes (1) chemical and bacteriological analyses of samples collected in the field, (2) research into simple tests to be used in field sampling, (3) determinations of dosage injurious to workers handling poisonous elements and compounds found in trade processes, and (4) physiological changes of the body due to abnormal conditions arising from or inherent in industrial activities. Thus in connection with the investigation of trinitrotoluene poisoning the division of chemistry developed the analytical procedures for the detection of T. N. T. in the atmosphere (later applied to other nitro compounds), and studied the chemistry of T. N. T., its manufacture and impurities, and the vapor pressure and volatility of T. N. T. as influenced by temperature and humidity; and the division of pharmacology dealt with the toxicological and pharmacological aspects of the problem, such as the discovery of diagnostic tests for the early recognition of poisoning, the study of absorption of the poison, and the discovery of preventive measures. The principal findings were published in Reprint No. 534 from the Public Health Reports, June 13, 1919, and also with studies of the poisonous properties of parazol and the action of mercury fulminate on the skin, as Hygienic Laboratory Bulletin No. 126.

In connection with the administration of the act of Congress levying a prohibitive tax on white phosphorus matches, the division of chemistry, during 1914-15, examined samples of matches and match materials for the Commissioner of Internal Revenue and developed a new method for the detection of white or yellow phosphorus in the presence of other permissible forms (published as the fourth article in Hygienic Laboratory Bulletin No. 96).

From 1914 to 1917 this division carried on, in cooperation with the New York State Commission on Ventilation (see p. 54), studies of heat dissipation from the human body and devised various types of instrument, called the comfortimeter, intended to record the actual characteristics of the atmosphere—temperature, humidity, and velocity of air movement—in terms of physical comfort.

It also made a study of the volatility of lead and other metals from molten type metal, under conditions existing in the Government Printing Office in 1916, and analyzed samples of dust and glazes in connection with the pottery investigation by the Office of Industrial Hygiene and Sanitation in 1919.

RAILROAD LABOR BOARD.

5 North Wabash Avenue, Chicago, Ill. R. M. Barton, chairman.

This board was created by section 304 of the transportation act, 1920 (41 Stat., 470), to hear and decide disputes involving grievances, rules, or working conditions not settled by the railroad boards of labor adjustment (provided for in sec. 302) and disputes involving wages or salaries not settled by conferences of representatives of the

carriers and their employees or subordinate officials directly interested therein (sec. 301).

The following studies have been published by the board as Wage Series, Reports Nos. 1 and 2:

No. 1. Average daily and monthly wage rates of railroad employees on class 1 carriers; in effect under private control (December, 1917); under the United States Railroad Administration (January, 1920); and under Decision No. 2 (July 20, 1920), United States Railroad Labor Board. August, 1920. 12 p., fold. tables.

No. 2. Rules for reporting information on railroad employees, together with a classification and index of steam railroad occupations. May, 1921. 320 p. (Prepared by the board and approved by the Interstate Commerce Commission, to be used by carriers in reporting wage and compensation data to either body.)

In decision No. 119, April 14, 1921, providing for abrogation of the national agreement entered into during the period of Federal control, the board laid down 16 principles for the settlement of disputes as to rules and working conditions by local conferences between the carriers and their employees, and a number of interpretations and addenda have been issued since the date of the original decision.

Decision No. 222, effective August 16, 1921, has determined the conditions under which overtime is to be paid to the employees comprised in the six shop crafts on about 100 railroads submitting this question to the board. The machinists, boiler makers, blacksmiths, sheet metal workers, electrical workers, and carmen and their apprentices and helpers are affected.

UNITED STATES SHIPPING BOARD.

1319 F Street, NW., Washington, D. C.

DIVISION OF INDUSTRIAL RELATIONS.—In 1921 this division published a "Codification of the Shipbuilding Labor Adjustment Board⁴ awards, decisions, and authorizations" (341 p.).

During 1918–19 the Industrial Service Section, Industrial Relations Group, Emergency Fleet Corporation, Philadelphia, prepared and issued the following publications:

Handbook on employment management in the shipyard: Bulletin I, Organizing the employment department. 1918. Bulletin 2, The employment building. 1918. Bulletin 3, Selection and placement of the worker. 1919. Special Bulletin, Labor loss. 1918.

Aids to employment managers and interviewers on shipyard occupations with descriptions of such occupations. 1918.

Opportunities in shipbuilding for the physically handicapped. 1919.

The physical examination in the employment department. 1919.

WAR DEPARTMENT—GENERAL STAFF.

State, War, and Navy Building, Washington, D. C.

OPERATIONS AND TRAINING DIVISION (G3).—Under the reorganization of the present year the advisory board and the training and instruction branch of this division now have charge of the training work of the Army previously carried on by the education and recreation branch of the War Plans Division (now abolished), to which the duties of the Committee on Education and Special Train-

⁴The history of this board from its organization in August, 1917, to its dissolution Mar. 31, 1919, written by W. E. Hotchkiss, supervising examiner for the board, and H. R. Seager, its secretary, was published in 1921 as Bulletin of the United States Bureau of Labor Statistics No. 283.

ing (organized February, 1918) were transferred in September, 1919. The advisory board, consisting of civilians (C. R. Mann, chairman), formulates the plans for training to be carried out by the training and instruction branch.

The method adopted by the board has been outlined in a mimeographed memorandum "The technique of army training" (8 pp.). It involves (1) the preparation by the Army authorities of minimum specifications of the personal characteristics, skill, and knowledge needed to meet the requirements of each of the many grades and ratings of the Army; (2) the preparation of standardized tests for selecting and assigning men; (3) the analysis of the required skill and knowledge into unit operations and information topics which make good instruction units, and the combination of these into a practical school program; (4) the preparation of students' manuals and instructors' guides; (5) the determination of the average time required for men to qualify for each grade or rating.

The personnel of the Division of Testing and Grading (D. Edgar Rice, director) of the research and development service, recently located at Camp Grant, Ill., has since the reorganization been transferred to Washington, D. C., to continue its work under the advisory board. The activities of this division started in the summer of 1920, and its force of about 19 men was engaged throughout the fall and early winter in administering tests for selection and assignment of men in the various Army camps and posts. Up to May, 1921, about 58,000 men had been tested and classified, on the basis of the Army intelligence tests and several elementary educational and vocational tests. The following is a brief statement of the tests used and the research and development work which the division has undertaken:

Army intelligence test—Alpha.—This test of intelligence for literates used during the war has been continued in use during the past year, because it was thoroughly standardized and an ample supply of copies was already on hand in the War Department. It is not found to be entirely satisfactory for use with Army men, as it gives too much weight to results of formal training and the division is engaged upon a revision of this test with a view to adapting it more accurately to the Army needs.

Army intelligence test—Beta.—This test, used during the war to measure the intelligence of men of a low degree of reading ability, has during the past year been used chiefly in the testing of illiterates in the recruit educational centers. A revision of it has been undertaken with a view to eliminating the difficulty in administering it, due to the necessity for using a demonstration blackboard.

Minimum intelligence test.—As the War Department has felt the need of a very simple test of intelligence that may be administered by recruiting parties and will serve to segregate men of low intelligence from those who will make satisfactory soldiers, the division is engaged upon the development of a test of this sort. It will differ from the alpha, beta, and individual tests such as the Stanford-Binet, in that it will not accurately classify men as to mental age or degree of intelligence, but is intended simply to reject the unsatisfactory by the use of a single critical score.

Minimum literacy test.—Developed over a year ago, this test has served satisfactorily in segregating those men who are of such low degree of literacy ability as to require special instruction in the recruit educational centers.

Classification literacy test.—The purpose of this additional test, developed by the division, is to classify the men in order to determine at which point their training should start.

Test for discharge from recruit educational center.—This test is similar in character to the other literacy tests, but is based to some extent on the course of instruction.

The tests above described have reference either to the measurement of intelligence for general purposes or to the specific activities of the recruit educational centers. In direct connection with the work of the Army schools, the following simple tests of formal training and mechanical aptitude have been developed to assist in properly assigning men to courses of training:

Arithmetic test, used in determining whether the student is prepared, with respect to ability in the fundamental operations of arithmetic, to enter various vocational courses; also to indicate the point at which his instruction in mathematics should begin.

Reading test, used to determine whether the student has sufficient understanding of language to enter courses in which the instruction is largely in printed form.

Mechanical-interest test, used to determine, in a general way, the mechanical aptitude of applicants for vocational courses. This is based on the assumption that if men have an interest in mechanical work they will, without special training, pick up a fund of information about the more common mechanical tools and operations.

General-trade test, used to measure the specific information of applicants for vocational courses with reference to the more common trades taught in the Army schools.

Investigations are in progress to select from a variety of tests a small number that will be most significant of business ability, and to develop tests of proficiency in (a) stenography and typewriting, (b) certain vocational courses, viz, machine work, automotive work, and drafting, and (c) general education subjects, such as spelling, vocabulary, mathematics, etc.

The tests that have been used during the past year have been printed or mimeographed; their publication is controlled by the Adjutant General's Office, War Department.

This division has also developed during the past year a standard system of rating students and a standard system of certification, which are now being published by the Adjutant General's Office for the use of the service.

II. STATE AND MUNICIPAL AGENCIES.

STATE AGENCIES.

CALIFORNIA. BUREAU OF JUVENILE RESEARCH.

Whittier, Calif. J. Harold Whittier, director.

Established by acts of the State legislature, 1915 and 1917, this bureau has charge of intelligence tests and related investigations in the three State schools of California, viz, Whittier State School, Whittier; California School for Girls, Ventura; Preston School of Industry, Waterman. A staff of seven persons is engaged in this work, which is divided into two main divisions, psychological and sociological. Numerous studies made in the field of delinquency have been published in the *Journal of Delinquency*, issued bimonthly by Whittier State School, and its supplementary monographs. Of these the two following titles deal with vocational adaptability:

The intelligence of the delinquent boy, by T. Harold Williams, Jan., 1919. 198 p. (*Journal of Delinquency*. Monograph No. 1.)

A statistical study of intelligence as a factor in vocational progress, by Karl M. Cowdery. (*Journal of Delinquency*, v. 4, No. 6, Nov., 1919, p. 221-240.)

CALIFORNIA. COMMISSION ON IMMIGRATION AND HOUSING.

525 Market Street, San Francisco, Calif. Simon J. Lubin, president.

Created by act of June 12, 1913, and empowered to make investigations into the condition, welfare, and industrial opportunities of immigrants in the State, including inspection of labor camps, employment agencies, etc. It administers the division of immigration and housing of the Department of Labor and Industrial Relations created by chapter 604, Laws of 1921, in effect July 30.

The results of the commission's studies of the problems of migratory labor and sanitation of labor camps are summarized in its annual reports. It has issued several editions of an "Advisory pamphlet on camp sanitation and housing" (79 p.).

CALIFORNIA. INDUSTRIAL ACCIDENT COMMISSION.

525 Market Street, San Francisco, Calif. W. J. French, chairman.

This commission, organized January 1, 1914, administers the division of workmen's compensation insurance and safety of the Department of Labor and Industrial Relations created by chapter 604, Laws of 1921, in effect July 30.

DEPARTMENT OF SAFETY.—H. M. Wolflin, superintendent. Surveys of the special hazards of various industries have been made by this department and safety codes to cover them have been prepared by

committees of employers, employees, and others interested in safety work, in cooperation with the commission. Public hearings were held to discuss the tentative drafts as completed by the committees, and after final revision the following have been adopted by the commission and made effective from the dates indicated:

1916: Jan. 1—mine safety rules, general safety rules; Aug. 1—woodworking safety orders, engine safety orders, laundry safety orders; Oct. 1—elevator safety orders.

1917: Jan. 1—electrical utilization safety orders, air-pressure tank safety orders, window-cleaning safety orders, trench construction safety orders; Mar. 15—logging and sawmill safety orders.

1918: Jan. 1—quarry safety rules; Jan. 15—general construction safety orders; Dec. 1—electrical station safety orders.

1919: Jan. 1—safety rules for gold dredges; Dec. 1—tunnel safety rules, general lighting safety orders.

1920: June 1—steam-shovel and locomotive-crane safety orders.

1921: Jan. 1—mine safety orders; Apr. 1—petroleum safety orders, shipbuilding safety orders.

In course of preparation (1921): X-ray safety orders, gas welding and cutting safety orders.

Further information is given in a paper on "The safety movement in California," by H. M. Wolflin, in Proceedings of the International Association of Industrial Accident Boards and Commissions, 1920 (published as U. S. Bureau of Labor Statistics Bulletin No. 281).

CALIFORNIA. INDUSTRIAL WELFARE COMMISSION.

870 Market Street, San Francisco, Calif. A. B. C. Dohrman, chairman.

Created by act of the legislature approved May 26, 1913 (Laws, 1913, c. 324), to regulate working conditions and establish minimum wages in occupations, trades, and industries in which women and minors are employed, this commission administers the division of industrial welfare of the Department of Labor and Industrial Relations created by chapter 604, Laws of 1921, in effect July 30.

The publications of the commission contain results of investigations as follows:

Report on the regulation of wages, hours, and working conditions of women and minors in the fruit and vegetable canning industry of California. 1917, 176 p. (Bulletin No. 1.)

Seating of women and minors in the fruit and vegetable canning industry of California. 1919. 14 p. (Bulletin No. 2a.)

Résumé of a study of the cost of living of women workers in California, made in 1914. (In second biennial report, 1915-1916, p. 19-57.)

Outline of a policy concerning "learners" in industry, by Meyer Bloomfield. (In second biennial report, 1915-1916, p. 69-76.)

Report on effects of the mercantile order. (In third biennial report, 1917-1918, p. 30-48.)

Effects of the laundry order. (In third biennial report, 1917-1918, p. 58-91.)

CONNECTICUT. COMMISSION ON CHILD WELFARE.

Hartford, Conn.

COMMITTEE ON DEFECTIVES.—Dr. Arnold Gesell, Yale University, chairman. The report of this committee on "Handicapped children in school and court," published in volume 2, part 4, of the commission's report to the governor, 1921, recommends (p. 33-36) vocational probation for defective youth. The subject is also treated in an article by Dr. Gesell in *Mental Hygiene* (v. 5, No. 2, Apr., 1921, p. 321-326). The results of a study made by Elizabeth B. Bigelow,

under Dr. Gesell's direction in connection with the commission's work, are given in an article entitled "Experiment to determine the possibilities of subnormal girls in factory work," published in *Mental Hygiene* (v. 5, No. 2, Apr., 1921, p. 302-320).

CONNECTICUT. DEPARTMENT OF LABOR AND FACTORY INSPECTION.

Hartford, Conn. Miss Charlotte Molyneux Holloway, industrial investigator.

Chapter 233, Laws of 1913, authorized the commissioner of labor and factory inspection to appoint a woman investigator to study the conditions of wage-earning women and girls. Since then separate biennial reports of the results of these investigations have been transmitted to the legislature and published. The 1917-18 and 1919-20 issues are designated "Reports on the conditions of wage-earners in the State" without limitation to women and girls. One thousand family budgets were secured in 1919-20.

DISTRICT OF COLUMBIA. MINIMUM WAGE BOARD.

Washington, D. C. Miss Elizabeth Brandeis, secretary.

Created by act of Congress, approved September 19, 1918, to establish minimum wages for women on the recommendation of conferences composed of representatives of employers, employees, and the public.

An investigation by the United States Bureau of Labor Statistics furnished the data for Bulletin No. 1, published by the board in January, 1919, on "The cost of living of wage-earning women in the District of Columbia."

The following wage surveys have been made by the board and results summarized in its annual reports: (1) Printing, publishing, and allied industries; (2) mercantile establishments (Bulletin No. 2); (3) hotels, restaurants, apartment houses, clubs, and hospitals (Bulletin No. 3); (4) laundries and dry-cleaning establishments; (5) manufacturing establishments; (6) car cleaners, and cleaners, maids, and elevator operators in office buildings and theaters (Monthly Labor Review, U. S. Bureau of Labor Statistics, November, 1920, v. 11, p. 976-982). The annual reports also include summaries of the proceedings of the conferences, the budgets submitted to them, report of a hearing on minimum-wage rates for minors in the mercantile industry (second annual report, p. 33-50), data on applicants for learners' certificates, etc.

CHICAGO COMMISSION ON RACE RELATIONS.

414 to 415 Oxford Building, 118 North La Salle Street, Chicago, Ill. Graham Romeyn Taylor, executive secretary.

Appointed by Gov. Lowden, of Illinois, following the riots of July, 1919, to study and report upon the broad question of the relations between the white and colored races. The commission is composed of 12 members—6 from each race. This work is organized under six committees, as follows: Racial clashes; Housing; Industry; Crime and police administration; Racial contacts; Public opinion.

The scope of the work of the committee on industry is defined as follows:

To study the industries employing Negroes; expansion of opportunities in industry; relative locations of work places and homes; wages; attitude of em-

employers and fellow employees toward Negro workmen; efficiency of Negroes; opportunities for advancement; organized labor in relation to the Negro.

Since February 1, 1921, a thorough and comprehensive inquiry into the relations of the races has been undertaken with the assistance of a staff of trained investigators, both white and colored, and the co-operation of many educational, governmental, and volunteer agencies. Throughout this study the emphasis has been placed upon the social and psychological aspects of the relations of the white and Negro groups.

The report is now in process of final editorial revision and will be ready shortly.

ILLINOIS. DEPARTMENT OF PUBLIC WELFARE.

Springfield, Ill. C. H. Jenkins, director of public welfare.

By act of the legislature approved June 28, 1919 (Laws, 1919, p. 534), this department was made responsible for the rehabilitation of physically handicapped persons residing in the State of Illinois. By section 2 (n) it is directed—

to conduct investigations and surveys of the several industries located in the State to ascertain the occupations within each industry in which physically handicapped persons can enter upon remunerative employment under favorable conditions and work with normal effectiveness and to determine what practicable changes and adjustments in industrial operations and practices may facilitate such employment.

Results of a survey relating to the rehabilitation of physically handicapped persons in Illinois are given in the official report (150 p.) published by the department in 1921, part of which was summarized in an article on "Physical restoration in the rehabilitation of disabled persons," by William T. Cross, survey officer, in *Modern Medicine* (v. 3, No. 3, March, 1921, p. 143-148). Analyses were made of 92 different jobs in 23 representative industries, showing that 9 per cent of the employees in these plants were engaged at work that might be performed by disabled persons. (Appendix F-1 of the report.)

ILLINOIS. IMMIGRANTS' COMMISSION.

Department of Registration and Education, Springfield, Ill.

Created in the Department of Registration and Education of the State of Illinois by an amendment to the civil administrative code approved June 10, 1919 (Laws, 1919, p. 8), and directed to investigate the conditions of employment and standards of housing and living, social organizations, and educational needs of the foreign born in the State. The results of its investigations completed thus far, under the direction of Miss Grace Abbott, have been published in two Bulletins:

No. 1. The educational needs of immigrants in Illinois. 1920. 37 p.

No. 2. The immigrant and coal-mining communities of Illinois. 1920. 43 p.

The work of the commission was suspended June 30, 1921, when Gov. Small vetoed its appropriations for the ensuing fiscal year. The office in Chicago has been closed and the records have been transferred to the department in Springfield, Ill. The data obtained in an investigation of Mexicans in labor camps, practically completed, was turned over to the Immigrants' Protective League, Chicago, which may prepare the material for publication. This league had supplied

mented the State appropriations by approximately an equal amount from its own funds in order to extend the work of the commission.

KANSAS. COURT OF INDUSTRIAL RELATIONS.

Topeka, Kans.

A tribunal of three judges created by act of the special session of the legislature in January, 1920, to regulate industrial relations in all employments and industries concerned with the production and distribution of food, clothing, and fuel and in all public utilities. Decisions in cases heard before this court to date have dealt with wage scales, train crews, and hours of labor on interurban railways, cessation or limitation of work in flour mills, "one man one job" policy in a case of seasonal employment, etc.

By act of March 16, 1921, the Industrial Welfare Commission and the Department of Labor were consolidated with this court.

The women's division of the Industrial Welfare Commission (Miss Linna E. Bresette, director of women's work) is making a survey of the cost of living of the women of the State, to include the 31 towns in which the United States Women's Bureau made its study of hours and wages in 1920. (See p. 23.) The plan of procedure is described briefly in *Monthly Labor Review* of the United States Bureau of Labor Statistics, August, 1921 (p. 206).

MASSACHUSETTS. DEPARTMENT OF EDUCATION.

State House, Boston, Mass.

DIVISION OF UNIVERSITY EXTENSION.—James A. Moyer, director. This division has given special attention to problems of immigrant education in the industries and two recent numbers of the *Bulletin* of the Department of Education have been devoted to this subject, viz:

Volume 5, No. 6 (whole No. 32): Proceedings of the State conference on immigrant education in Massachusetts industries, Plymouth, Mass., Sept. 16-18, 1920. (Under the joint auspices of the department and the Associated Industries of Massachusetts.) 124 p.

Volume 6, No. 4 (whole No. 36): Adult immigrant education in Massachusetts, 1920-21. 19 p.

VOCATIONAL DIVISION.—This division has recently inaugurated a program for the training of foremen. Representatives from a number of different industries are being trained in various industrial cities for conference leaders. They will take charge of conferences and classes for foremen on returning to their respective plants.

MASSACHUSETTS. DEPARTMENT OF INDUSTRIAL ACCIDENTS.

Room 272, State House, Boston, Mass.

VOCATIONAL TRAINING DIVISION.—Ernest L. Locke, director. Created under the Industrial Accident Board (now Department of Industrial Accidents) by act of May 28, 1918, for the rehabilitation of industrial cripples, this division has made several surveys of industries, involving analyses of physical requirements for particular jobs, to ascertain the opportunities for handicapped persons. These investigations have covered storage battery making and repairing, decorative plastering, sign painting, etc. The results have not been published but are available in the files of the division.⁵

⁵ Additional information on rehabilitation work in Massachusetts is given in the *American Labor Legislation Review*, Mar., 1919 (v. 9, No. 1, p. 126-129), and in *Proceedings of International Association of Industrial Accident Boards and Commissions*, 1920. (U. S. Bureau of Labor Statistics, Bulletin No. 281, p. 123-128.)

MASSACHUSETTS. DEPARTMENT OF LABOR AND INDUSTRIES.

State House, Boston, Mass. E. Leroy Sweetser, Commissioner of Labor and Industries.

The Department of Labor and Industries is one of the 20 administrative divisions into which the hundred or more boards, departments, and commissions of the Commonwealth have been consolidated by the reorganization act of 1919 (General acts, 1919, ch. 350). It supersedes the Board of Labor and Industries; the Board of Conciliation and Arbitration; the Minimum Wage Commission; the divisions of labor statistics, manufactures statistics, and free employment offices of the Bureau of Statistics, and the offices of the Commissioner of Standards and the Surveyor General of Lumber; and by act of May 25, 1920, the Commission on Foreign and Domestic Commerce was placed under it. Its work is organized under divisions of Industrial Safety, Statistics, Minimum Wage, and Standards and the Board of Conciliation and Arbitration. The Bulletin of Current Activities (v. 1, No. 1, June, 1920) describes the work of the department and its several divisions and explains how the functions of the former boards and commissions included in the department are carried on under the reorganization.

DIVISION OF INDUSTRIAL SAFETY.—John P. Meade, director. This division continues the factory inspection work of the Board of Labor and Industries which, prior to the reorganization in 1919, had prepared and published in the series of Industrial Bulletins suggestions, rules, and regulations on the following subjects; Protection of eyes and prevention of accidents (No. 5); prevention of anthrax (No. 6); compressed-air work (No. 7); safety and machinery standards (No. 9); working conditions in foundries and the employment of women in core rooms (No. 10); safety in the manufacture of benzene derivatives and explosives (No. 11); prevention of accidents in building operations (No. 12); painting business (No. 13); requirements for the care of employees injured or taken ill in industrial establishments (No. 14).

The present division has added Industrial Bulletins Nos. 15 and 16:

No. 15. Conserving children in the industries of Massachusetts. 1920. 20 p. (For the teaching of safety to working children in the continuation schools.)

No. 16. Rules and regulations for safeguarding woodworking machinery. 1920.

Studies dealing with industrial health recently made by this division include an investigation of tobacco factories, with special reference to the effect of the work upon women and children, and an investigation of the health hazards of the granite-cutting industry. (Annual report, 1920, pp. 38-40.) The field work of a study of the employment of women in laundries, with special reference to the effect of the work upon health, has recently been completed. The inspection force is engaged at present in acquiring information relative to accidents occurring on the power punch press, with a view to securing better guarding on a type of machine that is productive of more permanent disabling injuries than any other in the industries of the State. An investigation of the type and character of first-aid treatment rendered injured persons in the industries is to commence shortly.

As the outcome of an investigation in 1920 a safety council has been organized with the object of reducing accidents to street railway and steam railway employees.

DIVISION OF MINIMUM WAGE.—Ethel M. Johnson, assistant commissioner, in charge. The Minimum Wage Commission, whose powers are now exercised by three associate commissioners of the department, was created in 1912 and has published the results of its investigations of the wages of women in a series of 23 Bulletins dealing with the following industries: Brush factories (Nos. 1, 3, 7); corset factories (Nos. 2, 21); candy factories (Nos. 4, 18); laundries (No. 5); retail stores (Nos. 6, 12); paper-box industry (Nos. 8, 22); women's clothing factories (Nos. 9, 14); hosiery and knit goods factories (No. 10); men's clothing and raincoat factories (Nos. 13, 15); office and other building cleaners (No. 16); hotels and restaurants (No. 17); canning and preserving establishments (No. 19); millinery industry (No. 20); manufacture of minor lines of confectionery and food preparations (No. 23).

During 1920 this division made investigations of the wages of women employed by firms manufacturing druggists' preparations, compounds, and proprietary medicines, and in establishments manufacturing stationery goods and envelopes. (Annual report, 1920, pp. 67–69.) It is planning a study of the public housekeeping occupation, to include hotels and restaurants, institutions such as hospitals and homes, apartment houses, and similar establishments.

A handbook of information for wage board members entitled "Wage Boards and Their Work" (11 p.) was published in 1920.

DIVISION OF STATISTICS.—Roswell F. Phelps, director. This division continues the annual reports issued by its predecessor, the Bureau of Statistics,* on statistics of labor (issued in parts as labor bulletins), statistics of manufactures, and public employment offices; and since March, 1920, has published quarterly the *Massachusetts Industrial Review*, superseding the "Quarterly report on employment in Massachusetts." It finished and published in 1920, as Labor Bulletin No. 132, the results of a special survey of "Wages and hours of labor in the metal trades in Massachusetts, 1914–1919" (72 p.), which includes a chapter giving classification and description of occupations.

MASSACHUSETTS. BOSTON PSYCHOPATHIC HOSPITAL.

74 Fenwood Road, Boston, Mass. C. Macfie Campbell, M. D., director.

This institution was the Psychopathic Department of Boston State Hospital from 1912 to 1916, when it became a separate establishment under the Commission (now Department) of Mental Diseases, created in that year.

The scientific papers of the staff, reprinted from various journals, have been issued in collected form as "Boston State Hospital—Collected contributions," 1913–1915 (three volumes), continued by the quarterly Bulletin of the Commission (now Department) of Mental Diseases (v. 1–4, 1917–1920).

* See the Massachusetts Bureau of Statistics, 1869–1915: a sketch of its history, organization, and functions, together with a list of publications and illustrative charts, by C. F. Gettemy. 1915. 115 p.

The psychiatric problems of industry have been of special interest to this institution from the beginning. Shortly after it was opened cases were referred to it for mental tests and examinations as to mental disease from the Industrial Accident Board of Massachusetts; and many problems concerning damages, allowances, and compensation had to be looked into with the tests devised by its psychologists. Another group of cases that have been investigated is that of the occupation-neuroses. Through the Social Service of the hospital studies have been made of the psychopathic employee and the relation between unemployment and mental diseases. The published results of these researches include the following:

Adler, H. M. Unemployment and personality: a study of psychopathic cases. (*Mental Hygiene*, v. 1, No. 1, Jan., 1917, p. 16-24.)

Jarrett, Mary C. The psychopathic employee: a problem of industry. (*Medicine and Surgery*, Sept., 1917, p. 727-741.)

— Shell-shock analogues: neuroses in civil life having a sudden or critical origin. (*Medicine and Surgery*, v. 2, No. 2, Mar., 1918.)

Briggs, L. Vernon. Occupational and industrial therapy. How can this important branch of treatment of mentally ill be extended and improved? (*Amer. Jour. of Insanity*, v. 74, No. 3, Jan., 1918.)

Southard, E. E. Discussion on illness in industry—its cost and prevention. (*Trans. Amer. Inst. Mining Eng.*, 1918, v. 59, p. 678-684.)

During 1919-20 further investigations in the mental hygiene of industry were undertaken by the late director, Dr. E. E. Southard, under a grant from Engineering Foundation (see p. 102), which published three papers completed by him, as Nos. 1 to 3 of its reprint series. A report of progress of this work was published by Miss Mary C. Jarrett, who collaborated with him, in *Mental Hygiene* (v. 4, No. 4, Oct., 1920).

In the past two years an industrial research worker (Miss Clara W. Butler) has devoted her time in the Social Service to this problem and the results of the study are now being analyzed. It covers (1) intensive social case work on a few men, with special attention to employment adjustment, (2) industrial histories covering details of jobs held by patients for five years before admission to the Psychopathic Hospital—details obtained from both employers and patients, (3) a brief survey of the industrial aspects of the out-patient service of the hospital, (4) a bibliography of the "human element in industry," from the psychiatric point of view.

Several papers in the above collection deal with psychiatric social service, its functions and the preparation required for it; and in order to provide a supply of trained workers in this field the Boston Psychopathic Hospital staff in 1918 cooperated in the establishment of a training school of psychiatric social work at Smith College. (See p. 104.)

PSYCHOLOGICAL LABORATORY.—F. L. Wells, chief. The Yerkes-Bridges point scale was devised in this laboratory, while Dr. Yerkes was here as psychologist. The following papers, dealing with this scale and its application and other similar researches, have been published, in addition to studies dealing specially with criminals and the insane:

Yerkes, Robert M., and Bridges, J. W. The point scale: a new method for measuring mental capacity. (*Boston Med. and Surg. Jour.*, v. 171, No. 23, Dec. 3, 1914.)

Yerkes, R. M., and Anderson, Helen M. The importance of social status as indicated by the results of the point scale method of measuring mental capacity. (*Jour. Educ. Psychol.*, Mar., 1915.)

Yerkes, R. M., and Wood, Louise. Methods of expressing results of measurements of intelligence: coefficient of intelligence. (*Jour. Educ. Psychol.*, Dec., 1916, v. 7, No. 10, p. 593-606.)

Rossey, C. S. The Yerkes-Bridges point scale: as applied to candidates for employment at the Psychopathic Hospital. (*Boston Med. and Surg. Jour.*, Dec. 7, 1916, v. 175, No. 23, p. 822-824.)

Yerkes, R. M., and Rossey, C. S. A point scale for the measurement of intelligence in adolescent and adult individuals. (*Boston Med. and Surg. Jour.*, Apr. 19, 1917, v. 176, No. 16, p. 546-573.)

Foster, Josephine C., and Taylor, Grace A. The applicability of mental tests to persons over 50 years of age. (*Jour. App. Psychol.*, v. 4, No. 1, Mar., 1920, p. 39-58.)

MASSACHUSETTS SCHOOL FOR THE FEEBLE-MINDED.

Waverley, Mass. Walter E. Fernald, M. D., superintendent.

This institution has made a survey of the subsequent careers of its discharged patients, including men employed in 39 different occupations. A summary of the results was published in its seventy-second annual report for the year ending November 30, 1919, and also issued separately under the caption "After-care study of the patients discharged from Waverley for a period of 25 years," by W. E. Fernald (9 p.).

MINNESOTA. DEPARTMENT OF EDUCATION.

St. Paul, Minn.

DIVISION OF REEDUCATION.—Oscar M. Sullivan, director. This division by its research work has added materially to the list of occupations open to different types of handicapped men. Studies have been made by members of the staff in typical plants, and the various processes analyzed, with a view to discovering new opportunities for such persons.

MINNESOTA. INDUSTRIAL COMMISSION.

St. Paul, Minn.

BUREAU OF WOMEN AND CHILDREN.—Louis E. Schutz, superintendent. During 1918 this bureau, in conjunction with the Women in Industry Committee, Council of National Defense, carried on field investigations on the industrial employment of women in the State. The report written by Dr. Carol Aronovici and entitled "Women in industry in Minnesota in 1918" was published by the bureau in 1920 (36 p.).

MINNESOTA SCHOOL FOR FEEBLE-MINDED.

Faribault, Minn.

DEPARTMENT OF RESEARCH.—F. Kuhlmann, director. A number of studies of feeble-minded and tests of intelligence of children have been published from this department, principally in the *Journal of Psycho-Asthenics*, 1911-1916.

A revision of the Binet-Simon system by Dr. F. Kuhlmann, was issued as a monograph supplement to the 1912 volume of this journal; and a further extension and revision by the same author was printed by the institution in 1917. These are to be superseded shortly by the following work:

Kuhlmann, F. A handbook of mental tests; a further extension and revision of the Binet-Simon scale. Baltimore, Warwick and York, 1921. (In press.)

A paper on "Results of mental reexaminations of 600 feeble-minded over a period of 10 years." by Dr. Kuhlmann, presented before the American Association for the Study of Feeble-minded in 1920 is to appear in its proceedings.

NEW JERSEY. DEPARTMENT OF INSTITUTIONS AND AGENCIES.
State Hospital, Trenton, N. J.

DIVISION OF CLASSIFICATION AND EDUCATION.—Edgar A. Doll, director. Since February 1919, this division has been making psychological examinations of the prisoners in New Jersey State prison by the Army group test alpha supplemented by individual psychiatric and psychological examinations. Its report is included in the annual report of New Jersey State prison; papers on the criminological results entitled "A study of multiple criminal factors" and "The comparative intelligence of prisoners," by E. A. Doll, were published in the *Journal of Criminal Law and Criminology* for May and July 1920.

A program of research in the application of psychological tests for the purposes of vocational education and industrial placement in the prison, outlined in the annual report for 1919 (p. 70, 74-77), is being carried out. Surveys have been made of the prison industries and are to be followed by detailed analyses of the work processes from the psychological point of view. This phase of the division's work is discussed in an article on "Intelligence and industrial tests in institutional administration," by E. A. Doll, in the *Journal of Delinquency* (v. 5, No. 6, Nov., 1920).

NEW JERSEY. DEPARTMENT OF LABOR.

Trenton, N. J. Lewis T. Bryant, commissioner.

BUREAU OF ELECTRICAL AND MECHANICAL EQUIPMENT.—Rowland H. Leveridge, chief. This bureau has prepared and published the following safety codes and regulations:

General rules for the construction and installation of fire-alarm signal systems for factories, mills, and other work places. 1919. 33 p.

Code of lighting for factories, mills, and other work places. 1918. 42 p.

Safety standards for transmission machinery and all mechanically driven equipment. 1918. 13 p. (Also in ann. rep., 1919, p. 39-49.)

Safety standards relating to the use and care of abrasive wheels. 1919. 23 p. (Also in ann. rep., 1919, p. 21-38.)

BUREAU OF EXPLOSIVES.—Charles H. Weeks, chief. Organized in 1917, because of the great increase in the manufacture of explosives in New Jersey during the war, this bureau prepared and issued:

Laws and safety standards for the manufacture and storage of explosives. 1918. 44 p.

BUREAU OF HYGIENE AND SANITATION.—John Roach, chief. This bureau carries on investigations for the purpose of establishing sanitary and safety standards and has issued the following bulletins:

Sanitary standards for the felt hatting industry. 1915. 94 p.

Sanitary and engineering industrial standards. 1916. 36 p. (Mainly specifications and regulations for the removal of dust, fumes, etc.)

Sanitary industrial standards. 1917. 4 p.

Safety standards for lead corrodors and lead oxidizers, paint grinders, dry color manufacture. 1917. 28 p.

Instructions for the inspection of plants where anilin is produced or handled. 1917. 6 p. (Also in ann. rep., 1916, p. 53-55.)

Safety standards for the manufacture of nitro and amido compounds. 1919. 18 p.

Recent annual reports of the Department of Labor include summaries of special investigations, text of regulations, etc., made by this bureau in various industries, viz:

1915: Summaries of special investigations in potteries, porcelain plants, flint mills, lithographing plants, and the manufacture of pearl buttons (p. 36-49).

1916: Investigation of munitions hazards (p. 42-43); survey of the iron foundries in the State (p. 45-52); summary on chemical trades with test questions for inspectors (p. 53-81); paint and dry color trades (p. 81-86).

1917: Investigation of the lunch problem in various industries (p. 30-33); sanitary standards for power laundries (p. 33-46); tannery investigation and anthrax hazard (p. 54-56).

1919: First-aid and hospital equipment in New Jersey industrial plants (p. 59-78); schedule of a sanitary survey of the pottery industry, made by the United States Public Health Service in cooperation with the bureau, to determine the risk to health in this industry resulting from the use of lead glaze (p. 79-86); standards for brass and bronze foundries and metal-finishing processes (p. 92-110).

NEW YORK (STATE). COMMISSION ON VENTILATION.

Prof. C.-E. A. Winslow, Yale University, chairman.

Nominated by the New York Association for Improving the Condition of the Poor and appointed by the governor of New York State in June, 1913, this commission was endowed with \$50,000 by Mrs. Elizabeth Milbank Anderson to be devoted to the study of the fundamental problems of ventilation, with a view to determining what atmospheric conditions are most favorable for human health and efficiency, and how they may most certainly and economically be maintained, as part of the original program of the department of social welfare of the A. I. C. P. (see p. 141). An additional sum of \$25,000 was provided by Mrs. Anderson in 1915.

The complete report of the work of the commission has not yet been published; but progress reports are found in the A. I. C. P. year-books for 1913, 1914, and 1915, *Journal of Industrial and Engineering Chemistry* (v. 6, No. 3, March, 1914), *Journal of the American Medical Association*, November 7, 1914 (v. 63, p. 1620-1628), *American Journal of Public Health* (v. 5, No. 2, 1915), papers read at the annual meetings of the American Society of Heating and Ventilating Engineers in 1915 and 1916 by D. D. Kimball (engineer member of the commission) and George T. Palmer (chief of investigating staff), and articles in *Science* by C.-E. A. Winslow (n. s., v. 41, p. 625-636) and Frederic S. Lee (n. s., v. 44, p. 183-190).

An experiment chamber was fitted up at the College of the City of New York for studies of the effect of accurately controlled air conditions. Experiments were also made in New York City school-rooms; and by cooperative work in Springfield, Mass. (at the International Y. M. C. A. College gymnasium), and the Minneapolis schools the use of recirculated air, washed and conditioned as to temperature, was investigated. The commission also cooperated in special investigations with the Safety Institute of America (see p. 149) and the Framingham community health and tuberculosis demonstration of the National Tuberculosis Association (see p. 136) and in other researches.

The scientific contributions by the commission's investigators are published in various journals, including:

(1) Papers on methods and apparatus:

Lee, Frederic S. The experimental methods of the New York State Commission of Ventilation. (*Proc. Soc. Exper. Biol. and Med.*, 1915, v. 12, p. 113-114.)

Palmer, George T. A new sampling apparatus for the determination of aerial dust. (*Amer. Jour. Publ. Health*, v. 6, No. 1, p. 54-55.)

— A study of methods for determining air dustiness. (*Amer. Jour. Publ. Health*, v. 6, No. 10.)

Winslow, C.-E. A. The katathermometer as a measure of the effect of atmospheric conditions upon bodily comfort. (*Science*, n. s., v. 43, p. 716-719.)

(2) Papers on physiological effects of air conditions on appetite, muscular work, the blood, etc.:

Winslow, C.-E. A., and Palmer, G. T. The effect upon the appetite of the chemical constituents of the air of occupied rooms. (*Proc. Soc. Exper. Biol. and Med.*, 1915, v. 12, p. 141-144.)

Lee, Frederic S., and Scott, Ernest L. The action of temperature and humidity on the working power of muscles and on the sugar of the blood. (*Amer. Jour. Physiol.*, v. 40, No. 3, May, 1916.)

Winslow, C.-E. A., Miller, J. A., and Noble, W. C. The effect of moderately high atmospheric temperatures upon the formation of hemolysis. (*Proc. Soc. Exper. Biol. and Med.*, 1916, v. 13, No. 5, p. 93-98.)

(3) Special studies of the effects of temperature and humidity upon the mucous membrane of the nose and throat to shed light on the question of susceptibility to common colds and health hazards of laundry workers:

Miller, James A., and Cocks, G. H. The effect of changes in atmospheric conditions upon the upper respiratory tract. (*Trans. Amer. Climat. and Clin. Assoc.*, 1915.)

Cocks, Gerald H. Experimental studies of the effect of various atmospheric conditions upon the upper respiratory tract. (*Laryngoscope*, 1915, v. 25, p. 603-651, awarded the gold medal of the American Laryngological, Rhinological, and Otological Society for meritorious research.)

Miller, James A., and Noble, W. C. The effect of exposure to cold upon experimental infection of the respiratory tract. (*Jour. Exper. Med.*, v. 24, No. 3, p. 223-232, Sept. 1, 1916.)

Miller, James A. Some physiological effects of various atmospheric conditions. (*Amer. Jour. Med. Sci.*, v. 153, No. 3, p. 412, Mar., 1917.)

(4) A bacteriological survey of the atmosphere:

Winslow, C.-E. A., and Browne, W. W. The microbial content of indoor and outdoor air. (*Monthly Weather Review*, v. 42, p. 452-453.)

(5) Psychological tests to show capacity of the subjects for mental work:

Thorndike, E. L., McColl, W. A., and Chapman, J. C. Ventilation in relation to mental work. 1916. 83 p. (Teachers' College, Columbia University. Contributions to Education, No. 78.)

Stecher, Lorie Ida. The effect of humidity on nervousness and on general efficiency. (*Archives of Psychology*, No. 38, Dec., 1916.)

NEW YORK (STATE). DEPARTMENT OF EDUCATION.

Albany, N. Y.

DIVISION OF VOCATIONAL AND EXTENSION EDUCATION.—L. A. Wilson, director. This division is engaged in making general industrial surveys and in establishing summer courses for the training of men to conduct foremen training conferences in industrial plants. It is not, however, carrying on foremen training work directly.

NEW YORK (STATE). DEPARTMENT OF LABOR.

124 East Twenty-eighth Street, New York, N. Y. Henry D. Sayer, industrial commissioner.

This department is now under the administration of the industrial commissioner; an office created by chapter 50, Laws, 1921, abolishing the State Industrial Commission, which had administered the labor laws since 1915.⁷

BUREAU OF INDUSTRIAL CODE, 124 East Twenty-eighth Street, New York City.—This bureau is concerned with rules for safety and sanitation in industrial and mercantile establishments and is charged with the revision and enlargement of the New York State Industrial Code (latest edition, 1920) which has been compiled in the course of seven years in accordance with powers conferred on the State Industrial Board and its successor, the State Industrial Commission, and has the force and effect of law. The bureau also conducts the industrial safety congress of New York State, and the safety exhibits in connection therewith, which has been held in various cities (fifth, at Syracuse, N. Y., December 6 to 9, 1920; proceedings published in 1921).

BUREAU OF INDUSTRIES AND IMMIGRATION, 125 East Twenty-seventh Street, New York City.—Mrs. Marian K. Clark, chief investigator. Complaints by alien employees in New York industries are investigated by this bureau, including wage claims, exploitation by employment agencies, and the like. It has also made community surveys of immigrant living and labor conditions in a large number of the towns of the State and studies of the relationship between alien illiteracy and mental defect and industrial accidents. In 1917 it issued a pamphlet on "The English for safety campaign."

BUREAU OF INSPECTION.—The Division of Industrial Hygiene (John H. Vogt, director), created in 1913,⁸ has prepared the following issues in the series of Special Bulletins:

- No. 79. Anthrax. 1916. 22 p.
- No. 82. Hoods for removing dust, fumes, and gases. 1917. 23 p.
- No. 83. Dangers in manufacture of Paris green and Scheele's green. 1917. 17 p.
- No. 86. Dangers in the manufacture and industrial uses of wood alcohol. 1917. 17 p.
- No. 89. Health hazards of the cloth-sponging industry. 1918. 24 p.
- No. 90. A simple and inexpensive respirator for dust protection. 1918. 10 p.
- No. 96. Health hazards of the chemical industry. 1919. 69 p.
- No. 101. Asphyxiation in garages and other automobile accidents. 1920. 23 p.
- No. 102. Devices for sanitary control of material disengaged in industrial processes. 1921. 31 p.

⁷ The New York State Factory Investigating Commission, created in 1911, presented four extensive reports (11 vols.) to the legislature, 1912-1915, including, in addition to the testimony at public hearings, appendices containing the results of special investigations, e. g., sanitation for factories, fire hazard, working conditions in bakeries and the chemical, tobacco, printing, and canning industries, employment of women and children in factories and mercantile establishments, night work for women, lead and arsenic poisoning, wood alcohol, dangers to workers in the manufacture and use of commercial acids, wages in the confectionery, paper-box, shirt, button, and millinery industries, minimum-wage problem, vocational training, cost of living.

⁸ Prior to this date special investigations in occupational diseases and industrial hygiene were made by the Medical Inspector of Factories and published in the annual reports of his office (included in the annual reports of the Department), as follows: 1908—ventilation of factories; 1909—calico print industry, bakeries in Manhattan borough, potteries; 1910—phosphorus matches, pearl buttons, results of air analyses in certain factories; 1911—felt-hat industry, cloak and suit industry in New York City, results of air analyses in these industries, ventilation of a department store.

BUREAU OF MEDIATION AND ARBITRATION.—A study of "plant disability funds" (16 p.) by Charles M. Mills, industrial counselor for this bureau, was published April, 1921, as Special Bulletin No. 105.

BUREAU OF STATISTICS AND INFORMATION, Capitol, Albany, N. Y.—E. B. Patten, chief statistician. This bureau has published, in the series of Special Bulletins, various issues dealing with statistics of unemployment, trade-unions, wages and hours, strikes and lockouts, and industrial accidents; compilations of New York labor laws; court decisions on workmen's compensation, labor laws and industrial disputes; No. 76, European regulations for prevention of occupational diseases (77 p.), and the results of special investigations, as follows:

No. 77. Industrial accident prevention. 1916. 54 p.

No. 91. A plan for shop safety, sanitation, and health organization. 1919. 32 p.

No. 92. Weekly earnings of women in five industries (paper boxes, shirts and collars, confectionery, cigars and tobacco, and mercantile establishments). 1919. 21 p.

No. 108. Sickness among New York State factory workers in 1919. 1921. 29 p. (Based on data collected and turned over to the bureau by the Associated Industries of New York State.)

It also publishes monthly *The Labor Market Bulletin*, giving current information about the extent of employment in factories and building work, average earnings, and food prices, labor supply and demand at State employment offices.

BUREAU OF WOMEN IN INDUSTRY, 124 East Twenty-eighth Street, New York City.—Miss Nelle Swartz, chief. Results of special investigations relating to women in industry made by this bureau have been published in the following Special Bulletins:

No. 93. The industrial replacement of men by women. 1919. 69 p.

No. 100. The telephone industry. 1920. 95 p. (An investigation of the conditions of employment for women in the telephone exchanges throughout the State, with especial reference to wages, hours, sanitation, and labor turnover and its causes, made at the request of the governor.)

No. 104. Industrial posture and seating. 1921. 56 p.

Unpublished reports which have been completed deal with: (1) The paper-box industry in New York State; (2) the candy industry; (3) the employment of women in canneries; (4) employment of women at grinding and polishing; (5) employment of women in transportation; and (6) work accidents among women. Of these, (3), (4), and (5) were prepared to assist the Industrial Commission in framing rules and regulations covering employment in the occupations to which they relate; some of the results of (6) were published in *The Bulletin*, issued by the industrial commission (v. 6, No. 3, December, 1920, p. 56-57.) An investigation of wages, hours, and length of service of women employed in five-and-ten-cent stores is in progress.

NORTH DAKOTA. WORKMEN'S COMPENSATION BUREAU.
Bismarck, N. Dak.

MINIMUM WAGE DEPARTMENT.—Hazel Farkasch, secretary. Organized in 1919 to take charge of the administration of the minimum wage law enacted in that year, this department has made investigations of the hours of labor, working conditions and wages of women

in hotels and restaurants, retail stores, laundries, telephone exchanges, and factories in the State. A summary of the results of these investigations and the recommendations of the conferences, including rates of pay, terms of apprenticeship, work time, etc., are given in its first annual report for the year ending June 30, 1920 (48 p.).

OHIO. STATE DEPARTMENT OF HEALTH.

Columbus, Ohio.

DIVISION OF INDUSTRIAL HYGIENE.—Dr. Emery R. Hayhurst, Ohio State University, consultant. Organized in 1915 following the survey of occupational diseases made by the State Board of Health in pursuance of a joint resolution adopted by the State legislature in February, 1913 (Laws, 1913, v. 103, p. 975), and the results of which were published in a report entitled:

A survey of industrial health hazards and occupational diseases in Ohio, by E. R. Hayhurst. 1915. 438 p.

Most of the research work of the division has consisted of investigations in industrial plants similar to those made in the original survey. One of the principal studies undertaken concerned the healthfulness of the coal-mining industry of the State, the results of which are published in the following articles:

Hayhurst, E. R. Health of Ohio coal miners. (Ohio Public Health Jour., v. 10, Nos. 2-5, Feb.-May, 1919.)

— The health hazards and mortality statistics of soft-coal mining in Illinois and Ohio. (Jour. Indust. Hyg., v. 1, No. 7, Nov., 1919, p. 360-367.)

Starr, E. B. Excessive mortality from influenza-pneumonia among bituminous coal miners of Ohio in 1918. (Amer. Jour. Pub. Health, v. 10, No. 4, Apr., 1920, p. 348-351.)

In 1918 a survey of the munitions industry was begun and laboratory studies of the infections from oil-cutting compounds and lubricants were made and published as follows:

Albaugh, R. P. Cause and prevention of furunculosis and wound infections among machinists. (Ohio Pub. Health Jour., v. 9, No. 4, Apr., 1918, p. 145-152.)

A number of different trade processes involving dangers to health have been investigated from time to time; clinical studies of occupational diseases have usually been concerned with individual cases, in which disease or death was alleged to be due to occupational causes. The following is a partial list of miscellaneous contributions since 1915:

Hayhurst, E. R. The prevalence of occupational factors in disease and suggestions for their elimination. (Amer. Jour. Pub. Health, v. 5, No. 6, June, 1915, p. 538-550.)

— The classification of hazardous occupations. (Amer. Jour. Pub. Health, v. 6, No. 5, May, 1916, p. 460-469.)

Albaugh, R. P. The dangers connected with the spray method of finishing and decorating. (Jour. Amer. Med. Assoc., July 14, 1917, v. 69, p. 142; Ohio Pub. Health Jour., v. 6, No. 5, Nov., 1915, p. 512-514.)

— Gasoline engine exhaust gas poisoning. (Amer. Jour. Pub. Health, v. 7, No. 8, Aug., 1917, p. 664-666.)

Starr, E. B. Lead poisoning as a factor in chronic disability. (Ohio Pub. Health Jour., v. 10, No. 10, Oct., 1919, p. 384-386.)

Close cooperation exists between this division and the Department of Public Health and Sanitation of Ohio State University. (See p. 189.)

OHIO. INDUSTRIAL COMMISSION.

Columbus, Ohio.

Established in 1913, when seven State departments were merged and placed under it, namely, the departments of commissioner of labor statistics, chief inspector of mines, chief inspector of workshops and factories, chief examiner of steam engineers, board of boiler rules, State board of arbitration and conciliation, and State liability board of awards. Since 1915 its annual report has been published in "Ohio general statistics," issued by the Secretary of State.

DEPARTMENT OF INVESTIGATION AND STATISTICS.—George F. Miles, chief statistician. This department has prepared and issued a series of reports, Nos. 1 to 39, latterly also numbered as Bulletins of the Industrial Commission, consisting mainly of statistics of wages and employment, accidents and workmen's compensation, mines and quarries, and reports on the inspection of workshops and factories and the work of the free labor exchanges. The series also includes the following reports of special investigations by the department:

No. 14. Cost of living of working women in Ohio. 1915. 255 p.

No. 18. Physical examination of wage earners in Ohio in 1914. 1915. 29 p. (Bulletin, v. 2, No. 6.)

No. 24. Job selling in industrial establishments in Ohio. 1916. 38 p. (Bulletin, v. 3, No. 5.)

No. 29. Infections following industrial accidents in Ohio. 1917. 12 p. (Bulletin, v. 4, No. 3.)

No. 32. Preliminary survey of labor camps in Ohio. 1918. 22 p. (Bulletin, v. 4, No. 11.)

During the year 1916-17 this department made an inquiry into the industrial futures of 269 workmen awarded compensation for permanent partial injury during the period January 1, 1914, to June 30, 1915, for the purpose of ascertaining in what measure their handicaps had affected their subsequent employment as to rate of wages, loss of time, change of trade or employer and cause of unemployment if found not at work. The report of this study has not yet been published.

OREGON. INDUSTRIAL WELFARE COMMISSION.

Portland, Oreg. W. L. Brewster, chairman.

This commission created in 1913 to establish minimum wages and maximum hours of labor for women and minors published in 1914 a report of an investigation of power laundries in Portland (52 p.). Its latest biennial report for 1919-20 contains (p. 13-19) a summary of studies on the length and wage of the apprenticeship period in the mercantile, factory, and laundry industries.

PENNSYLVANIA. DEPARTMENT OF LABOR AND INDUSTRY.

Harrisburg, Pa. Clifford B. Connelley, commissioner.

Created by act of the legislature approved June 2, 1913 (P. L. 396), the department organization now includes: Industrial Board, Workmen's Compensation Board; Bureau of Inspection, Division of Hygiene and Engineering, Bureau of Mediation and Arbitration, Bureau of Employment, Bureau of Workmen's Compensation, and Bureau of Rehabilitation. The recent reports of these boards and bureaus have been published as Bulletins of the department.

The department held four annual welfare and efficiency conferences up to November, 1916 (proceedings of the fourth in *Monthly Bulletin*, v. 4, Nos. 2-3, February-March, 1917). These were discontinued during the war and resumed as the annual safety congress in March, 1920 (proceedings issued as *Bulletin*, v. 7, No. 4).

In February, 1920, a conference of superintendents and employment managers was held at Harrisburg to discuss employment problems, and an "Employment Advisory Group" of the Pennsylvania Department of Labor and Industry was organized. A digest of the proceedings forms *Bulletin*, volume 7 (series of 1920), No. 3.

An Industrial Relations Conference is to be held at Harrisburg, October 24-27, 1921. The subjects for the different sessions are: Industrial waste, Women and children in industry, Industrial cooperation, Industrial education, Present industrial situation, Industrial publicity, and Medical supervision in industry.

INDUSTRIAL BOARD.—Fred J. Hartman, secretary. This board consists of the commissioner, who is chairman, and four additional members appointed by the governor, viz: An employer of labor, a wage earner, a woman, and a representative of the public, for a term of four years, retiring in rotation. Its functions are (1) to investigate matters relating to employment and effect of labor laws; (2) to make rules and regulations under the various labor laws, e. g., safety standards, dangerous or injurious occupations in which minors may not be employed, modifications of provisions of the act relating to employment of women.

The work is organized in four divisions, one being assigned to each associate member, viz:

(1) Women and children in industry—the rulings of the board pertaining to these workers have been published in two pamphlets.

(2) Industrial relations—the activities under this division include the establishment of the Bureau of Employment, investigation of various strikes, campaigns in behalf of organizing for safety and Americanization; in the fall of 1920 studies of immigrant problems, preparatory to an investigation of labor camps, and of systems of apprenticeship in various States were begun.

(3) Industrial surveys, industrial education, publications, etc. Under this division are the surveys of working conditions, health hazards, etc., made by the Division of Hygiene and Engineering and cooperative surveys, such as the study of fire prevention in industrial plants provided for by Bryn Mawr College alumnae in 1916 (in second annual report, 1915-16, p. 29-74), and the survey of industrial home work in Pennsylvania, made with the Consumers' League of Eastern Pennsylvania (see p. 97) and the Carola Woerishoffer Department at Bryn Mawr College (see p. 166) in 1917-18. A supplementary survey was made in October, 1920, to check up the latter for publication.

(4) Safety standards and safety appliances. The safety standards committee initiates the formulation of safety standards by representative committees, submits tentative drafts for public hearings, and prepares final drafts for adoption by the board; the approvals committee, consisting of a member of the board, the chief of the Bureau of Inspection, the chief of the Division of Hygiene and Engineering, and the secretary of the board is concerned with official approval of satisfactory safety devices.

The following completed "Safety standards of the Industrial Board" have been published and a revision of them is in progress:

Power transmission; railings, toe-boards, platforms, and runways (rev. ed.); stationary engines (rev. ed.); machine tools (rev. ed.); forging and stamping; polishing and grinding; compressed air; woodworking machinery; bakeries (rev. ed.); fire prevention; canneries (rev. ed.); boilers; foundries; ladders; cereal mills; lighting; elevators; explosives; cranes; electric code; lead corroding and oxidizing; paint grinding; dry colors; nitro and amido compounds; brewing and bottling; motion-picture machine operation; scaffolding; plant railways; shop clothing for women; printing and allied industries.

New standards recently completed and not yet published include industrial sanitation, industrial ladders, and head and eye protection. Data are being gathered on quarries, the galvanizing industry, tunnels, and mines, other than coal mines.

A report of the activities of the Industrial Board to December 31, 1919, have been issued as Bulletin (series of 1920), volume 7, No. 6; "What Pennsylvania is doing for safety and safety work," as volume 7, No. 7. A monthly Bulletin of Information is issued by the board giving its current activities.

DIVISION OF HYGIENE AND ENGINEERING.—Dr. Francis D. Patterson, chief. This division consists of the chief medical inspector and engineering experts in the Bureau of Inspection, under the immediate charge of the commissioner. It makes special inspection of factories and mercantile establishments and conducts special investigations relative to industrial processes and conditions, e. g.:

Physical standards and qualifications applied to children requesting employment certificates, 1915. (Based on physical examination of children between 14 and 16 applying for such certificates in Philadelphia, June–August, 1914.)

Reports on the physical condition of a group of textile mill operatives in Pennsylvania and of individuals living under the same conditions as textile mill operatives but not engaged in that work. (In ann. rep., 1915, pt. 2, p. 116–241.)

Report on the methods employed in the white lead and lead oxide industries in Pennsylvania to safeguard the health of the workmen. (Bulletin, v. 2, No. 11, Nov., 1915.)

Investigation of health of 400 tobacco workers. (Bulletin, v. 4, No. 6, June, 1917).

This division has held a number of conferences of industrial physicians and surgeons. The first four formed part of the annual welfare and efficiency conferences of the department; the fifth to ninth inclusive were held separately and the proceedings were printed in the Pennsylvania Medical Journal (March, 1918–January, 1920) and issued as separates; the tenth constituted a section of the annual safety congress of 1920.

BUREAU OF REHABILITATION.—S. S. Riddle, chief. Established by act of the legislature approved July 18, 1919, for the rendering of physically handicapped persons fit to engage in a remunerative occupation. By section 5 (k) the chief is empowered—

To conduct investigations and surveys of the several industries located in the Commonwealth to ascertain the occupations within each industry in which physically handicapped persons can enter upon remunerative employment under favorable conditions, and work with normal effectiveness, and to determine what practicable changes and adjustments in industrial operations and practices may facilitate such employment.

The report of activities to January 1, 1921, published as the department's Bulletin, volume 8 (series of 1921), No. 2, does not show any surveys of the kind contemplated in this provision. But prior to

the establishment of this bureau the Department of Labor and Industry, in January, 1918, sent out a questionnaire to Pennsylvania employers to ascertain opportunities in their establishments for employment of persons handicapped by various types of disability and to obtain data on crippled workers actually employed. The returns, showing more than 50,000 employment opportunities, were analyzed and tabulated by the Bureau of Employment and the results published as Bulletin, volume 5 (series of 1918), No. 2.

TEXAS. BUREAU OF LABOR STATISTICS.

Austin, Tex.

WOMAN'S DIVISION.—Mrs. Lena Gardner, chief. In 1920 this division made a survey of woman workers in Fort Worth, Tex., and issued a mimeographed report containing the results (summarized in Monthly Labor Review of the U. S. Bureau of Labor Statistics, January, 1921, p. 157-158). A child labor survey in Austin and Corpus Christi and an industrial survey of El Paso are in progress.

WASHINGTON. DEPARTMENT OF LABOR AND INDUSTRIES.

Olympia, Wash.

Created by act of February 9, 1921, which reorganized the administrative departments of the State and brought together under a single director various offices, boards, and commissions dealing with labor. It comprises three divisions, (1) industrial insurance, (2) safety, (3) industrial relations.

INDUSTRIAL WELFARE COMMITTEE.—This committee, consisting of the director of labor and industries, the supervisor of industrial insurance, the supervisor of industrial relations, and the supervisor of women in industry, exercises the powers and performs the duties formerly devolving upon the Industrial Welfare Commission.

Created by act of March 24, 1913, and authorized to fix minimum wages and standard conditions of labor for women and minors, this commission made a preliminary investigation and published a "Report on the wages, conditions of work, and cost and standards of living of women wage earners in Washington" (111 p.) in March, 1914 (reprinted as Appendix A in first biennial report, 1913-1914). Its first and second biennial reports contain other data on cost of living, summaries of occupational surveys and of the proceedings of wage conferences, a survey made to ascertain the effects of minimum wage, fruit cannery investigations, etc.

WISCONSIN. INDUSTRIAL COMMISSION.

State Capitol, Madison, Wis. - Fred M. Wilcox, chairman.

This commission, created in 1911, is organized in seven departments, viz: Safety and sanitation, Workmen's compensation, Woman and child labor, Employment offices, Mediation and arbitration, Apprenticeship, Statistics. It undertakes investigations only for the purpose of obtaining data on which to base rules and regulations or for other administrative purposes,⁹ e. g., during 1914-15,

⁹ In 1915 the commission, to obtain data upon which the hours of employment for women might be fixed under the State law providing that such working hours "shall not be prejudicial to their health, safety, or welfare," requested the cooperation of the U. S. Public Health Service, which detailed Dr. Robert Oleson to direct a survey of the women-employing industries of the State. The investigation was carried on from November, 1915, to October, 1916, and included special intensive studies of fatigue and hourly production in its relation to the length of the work-day and to shop equipment. Brief reports were published in the annual reports of the U. S. Public Health Service for 1916 (p. 44-46) and 1917 (p. 36-37).

sanitation and safety for women and children in paper mills, health hazards in the rubber industry. As a rule, the results of these investigations are not published.

SAFETY AND SANITATION DEPARTMENT.—Shortly after its establishment the commission organized a committee on safety and sanitation to formulate for it a series of general orders on safety and sanitation which after approval were promulgated as Bulletins of the Industrial Commission (v. 1, 2, 1912-13). The series of bulletins includes shop bulletins on accident prevention, designed for the use of superintendents and foremen; also "Results of investigations on permanent partial disabilities" (v. 2, No. 6). In 1915 the commission published "General orders on zinc mines," drafted with the assistance of a committee of mining engineers appointed at a conference of the zinc mining companies. This is now in process of revision.

This department has prepared and published three safety codes, of which the latest editions are as follows:

Code of boiler rules. 1920. 52 p.

Elevator code. 1920. 22 p.

Industrial lighting code for factories, mills, offices, and other work places. 3d ed. rev. 1921. 51 p.

WOMEN'S DEPARTMENT. 809 Manufacturers' Home Building, Milwaukee.—Miss Maud Swett, director. This Milwaukee office of the Woman and Child Labor Department was organized in April, 1916. One report containing the results of a special investigation has been published, viz, "Cost of living of women workers in Wisconsin," 1916 (29 p.). In the summer of 1917 the department made a study of metal trades establishments in Milwaukee to ascertain the new operations women were actually performing and the processes which they might perform. In 1918 it conducted an investigation on the employment of women on street-car lines and made a study of the proper length of the meal period for women employees.

During the past few months it has been making surveys in several Wisconsin cities to furnish data on cost of living of working women for the use of the advisory board in connection with minimum-wage determinations, but this material has not been published. A study of the employment of women and girls on power sewing machines is in progress, and an investigation on the question of prohibiting women from working at buffing and polishing machines and at plating is to be undertaken shortly.

EMPLOYMENT OFFICES DEPARTMENT.—In January, 1918, the commission undertook a survey of the large manufacturing industries of the State to determine what trades or processes were open to men with certain permanent handicaps, and in the following August a division for handicapped persons was organized within the employment service as part of the Milwaukee public employment office. An analysis of placements of the first five months is given in "Industrial experience of handicapped workmen in Wisconsin," by George P. Hambrecht. (Amer. Labor Legisl. Rev., v. 9, No. 1, Mar., 1919, p. 117-125.)

APPRENTICESHIP DEPARTMENT.—W. J. Simon, supervisor of apprenticeship. This department is charged with the enforcement of the apprenticeship law (Statutes, sec. 2377), which regulates the content of indentures and the instruction to be provided.

In 1915 a State committee representing the interests of the employers, the employees, and the continuation schools, was called together in Milwaukee by the Industrial Commission. From this committee was created a State Apprenticeship Board to consider some of the important details of administration and to advise the supervisor of apprenticeship. Upon its advice a standard form of apprenticeship indenture was prepared. The details of the processes to be taught and the length of time to be devoted to each have been worked out by other advisory committees composed of practical men actually engaged in that particular trade, employers and employees being represented equally.

To date the following trades have been classified and advisory committees organized to standardize the terms of apprenticeship indentures: All the metal trades, bakers, bricklayers, engravers, plasterers, printers, painters and decorators, tailors, electricians, carpenters, and plumbers. Definite schedules have been determined for the following trades: Blacksmith, draftsman, electrician, baker, shoemaker, custom tailor, milliner, jeweler, watchmaker, printer, compositor, lithographing transferer, sheet metal worker, auto mechanic, boiler maker, wire weaver, ship fitter, photo-engraver, commercial artist, tinsmith, wood engraver, photographer, stone metal artist, knitting machine adjuster, dressmaker, templet maker, copper etcher, paper ruler, painter, meat cutter, and artificial-limb maker. These are printed in "Apprenticeship in Wisconsin—third report, 1919."

The department cooperates with the State Board of Vocational Education in planning courses of study for apprentices and issues pamphlets describing the subject matter of various trades with which an apprentice should be familiar (e. g. Standard requirements for bricklayers, 1918; Apprenticeship for plumbing in Wisconsin, 1919) and a periodical entitled "The Wisconsin Apprentice" (v. 1-4, 1918-21).

MUNICIPAL AGENCIES.

CINCINNATI PUBLIC SCHOOLS—Vocation Bureau.

Denton Building, Cincinnati, Ohio. Dr. Helen T. Woolley, director.

The Psychological Laboratory of this Vocation Bureau has established norms of mental and physical measurements which are applicable to industrial workers between the ages of 14 and 18 years. A brief account of the first two years of the tests and a statement as to what tests were included, is given in an article entitled "A new scale of mental and physical measurements for adolescents, and some of its uses," by Helen T. Woolley in *Journal of Educational Psychology* (November, 1915). The later results are not yet ready for publication.

STATE-CITY FREE EMPLOYMENT SERVICE.

City Hall, Cleveland, Ohio.

WOMEN'S DIVISION.—Miss Margaretta Williamson, director. This division is the successor of the Cooperative Employment Bureau for Girls which published in 1915 the volume entitled "Commercial work and training for girls," by Jeannette Eaton and Bertha M. Stevens.

Since that time it has made a number of studies of vocational opportunities for women in Cleveland, viz: Report on women employed in iron and steel industries in Cleveland, by Elizabeth Arnold (published in Appendix A of "A report on the problem of the substitution of woman for man power in industry" issued by the Cleveland Chamber of Commerce in 1918); Opportunities for women in the printing trades (December, 1917); and Negro women in industry (June, 1918), unpublished studies by Elizabeth Arnold; "Opportunities in Cleveland for women trained in domestic science and home economics" by Margaret Church, and "Opportunities for trained women in Cleveland factories," studies made for the Bureau of Occupations for Trained Women (108 City Hall, Cleveland); articles on opportunities for women by Elizabeth Arnold, published in newspapers September, 1920, and January, 1921.

DES MOINES (IOWA). INDEPENDENT SCHOOL DISTRICT—Board of Directors.

Garfield School, Des Moines, Iowa. Raymond Franzen, director of research.

An investigation is in progress in the high schools to determine which of the various group intelligence tests will give the best prediction of success in academic studies and also to discover some tests among them with prognostic value in vocational pursuits.

NEW YORK (CITY). BOARD OF EDUCATION.

BUREAU OF REFERENCE, RESEARCH, AND STATISTICS.—500 Park Avenue, New York, N. Y. E. A. Nifenecker, director. Investigations of intelligence tests are being made by Mr. John L. Stenquist of this bureau. One such investigation was made during 1920, in which the comparative results obtained in using five or six well-known intelligence tests were shown. Studies of tests of mechanical ability and some tests of educational achievement are in progress.

NEW YORK (CITY). DEPARTMENT OF HEALTH.

New York, N. Y.

DIVISION OF INDUSTRIAL HYGIENE.—S. Dana Hubbard, M. D., superintendent. Established in 1915 under the Bureau of Preventable Diseases; reorganized in 1918 and transferred to the Bureau of Public Health Education.

In addition to carrying on the inspection of industrial establishments and enforcement of the sanitary code and its educational program by means of lectures and group talks on industrial hygiene, distribution of posters on sanitation, hazards, etc., the division has made several industrial hygiene surveys, the results of which have been published as follows:

A clinical and sanitary study of the fur and hatters' fur trade, by L. I. Harris. 1915. 55 p. (Monograph series, No. 12; also in Monthly Bulletin, v. 5, No. 10, p. 267-298, Oct., 1915.)

The health of food handlers; a cooperative study by the Department of Health, Metropolitan Life Insurance Co., and American Museum of Safety. By L. I. Harris and L. I. Dublin. 1917. 24 p. (Monograph series, No. 17.)

Cost of clean clothes in terms of health; a study of laundries and laundry workers in New York City. By L. I. Harris and Nellie Swartz. 1916. 96 p. (Investigation made jointly by the division and the Consumers' League of the City of New York.)

Clinical study of the frequency of lead, turpentine, and benzine poisoning in 400 painters, by L. I. Harris. (Reprint No. 71. Aug., 1918.)

Health of workers in garages; a preliminary study, by L. I. Harris. (Monthly Bulletin, v. 8, No. 11, Nov., 1918.)

Conditions affecting health in the millinery industry, by S. D. Hubbard and Christine R. Kefauver. 1920. 39 p. (Monograph series, No. 22; also condensed in Monthly Bulletin, v. 10, No. 4, p. 81-97, Apr., 1920.)

Investigation of 34 cases of human anthrax occurring in New York City during 1919 and 1920, by S. D. Hubbard and W. Jacobsohn. (Monthly Bulletin, v. 10, No. 11, p. 249-266, Nov., 1920; see also Jour. Amer. Med. Assoc., Dec. 18, 1920, v. 75, No. 25, p. 1687.)

A paper on "Mercurial poisoning in the manufacture of clinical thermometers," by W. Jacobsohn, was published in the Journal of Industrial Hygiene, September, 1920 (v. 2, No. 5, p. 193-196).

The research work in progress is concerned with poisoning in the dye and other chemical industries and by illuminating gas and carbon monoxide, and with the detection of lead fumes in printing and linotype establishments.

An effort of the division to associate labor unions with it for improving general health conditions in the factories of the city by means of the Labor Sanitation Conference is described in the Monthly Bulletin of the department for June, 1917.

Physical examinations of industrial workers, which are voluntary and strictly confidential, are performed by the staff of industrial medical inspectors.

In addition to the above publications, Nos. 62, 75, 83, 86, and 91 of the reprint series of the department (consisting of papers by members of the staff reprinted from various journals) deal with industrial hygiene subjects; also Keep-well leaflet, No. 19—First aid to the industrial worker (43 p.).

OAKLAND (CALIF.) PUBLIC SCHOOLS.

BUREAU OF RESEARCH AND GUIDANCE, Room 1106, City Hall, Oakland, Calif.—Virgil E. Dickinson, director. This bureau includes departments of research, vocational guidance, placement, industrial welfare, and mental testing. It is engaged in a constant study of all of the factors pertaining to individuals in the public schools who need either adjustment in school, placement in industry, or vocational guidance. A vocational counselor is provided in every elementary school of any considerable size and in every high school. A program of work is outlined in a mimeographed "Bulletin for vocational counselors," issued April, 1921. The reports of the bureau are published in the superintendent's annual reports and also issued as reprints.

III. NONOFFICIAL AGENCIES.

(a) ASSOCIATIONS, SOCIETIES, FOUNDATIONS, RESEARCH BUREAUS, AND INSTITUTIONS.

AMALGAMATED CLOTHING WORKERS OF AMERICA.

Suite 701-715, 31 Union Square, New York, N. Y.

RESEARCH DEPARTMENT.—Established July, 1920, partly as an outgrowth of the economic research work done in connection with an injunction suit against the union at Rochester, N. Y., April-May, 1920 (Michael Stern *v.* Amalgamated Clothing Workers of America).

The department collects data on industrial and economic conditions with particular reference to (1) the men's clothing and related industries, (2) the cost of living, (3) wages and employment conditions; digests the decisions made by the impartial chairmen provided for under the agreements between the manufacturers and the union in the various clothing manufacturing centers in the United States and Canada; prepares the economic briefs submitted by the union in wage arbitration cases and makes the necessary investigations upon which the union briefs and arguments are based. It is frequently called upon by the officers of the union and the other departments (e. g., the organization, editorial and publicity departments) to furnish information in connection with their activities and to make investigations on wages, production standards, week-work and piecework systems, and other similar problems relating to working conditions in the industry.

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE.

Thirty-ninth Street and Woodland Avenue, Philadelphia, Pa.
Clyde L. King, editor.

Organized in December, 1889, to provide a national forum for the discussion of political and social questions. The academy does not take sides upon controverted questions, but seeks to secure and present reliable information to assist the public in forming an intelligent and accurate opinion. The annual membership fee is \$5. The academy publishes annually six issues of *The Annals* dealing with the most prominent current social and political questions, each issue containing from 20 to 25 papers upon the same general subject, largely solicited by the editorial office or presented at meetings of the academy. The following recent numbers deal with personnel questions:

v. 65, May, 1906 (No. 154): Personnel and employment problems. 326 p.

— Suppl. to May, 1916. Steadying employment, with a section devoted to some facts on unemployment in Philadelphia. By Joseph H. Willits. 104 p.

- v. 69, Jan., 1917 (No. 158) : The present labor situation; compulsory investigation and arbitration. 302 p.
- v. 71, May, 1917 (No. 160) : Stabilizing industrial employment. 246 p.
- v. 80, Nov., 1918 (No. 169) : Rehabilitation of the wounded. 164 p. (Industrial opportunities for disabled, p. 62-110.)
- v. 81, Jan., 1919 (No. 170) : A reconstruction labor policy. 211 p. (Industrial placement, p. 19-79; Standards for replaced labor, p. 86-186.)
- v. 85, Sept., 1919 (No. 174) : Modern manufacturing; partnership of idealism and common sense. 324 p. (The personnel, p. 110-219.)
- v. 90, July, 1920 (No. 179) : Industrial stability. 177 p.
- v. 91, Sept., 1920 (No. 180) : Labor, management, and production. 173 p.

Other articles can be found by consulting the "Twenty-fifth anniversary index" (July, 1890, to January, 1916) and the "Thirtieth anniversary index" (March, 1916, to July, 1921), issued as supplements to *The Annals*.

AMERICAN ASSOCIATION FOR LABOR LEGISLATION.

131 East Twenty-third Street, New York, N. Y. John B. Andrews, secretary.

Organized in 1906 to serve as the American branch of the International Association for Labor Legislation, the object of the association is to investigate conditions underlying labor legislation and to collect and disseminate information leading to the enactment and efficient enforcement of laws for the promotion of the comfort, health, and safety of employees. In 1920 there were 3,124 members (minimum annual dues, \$3). The annual meeting is held in the last week of December in conjunction with one or more of the American Economic, Sociological, Statistical, and Political Science Associations.

Investigations and studies have been made and conferences held by the association for the purpose of determining standards for legislation and furnishing data for the drafting of bills introduced in Congress and the State legislatures and for briefs in support of them on the following subjects: Workmen's compensation (including Federal employees, longshoremen, and seamen), vocational rehabilitation for industrial cripples, occupational diseases, health insurance, maternity protection, hours of labor in continuous industries, one day rest in seven, women in industry, national public employment service, unemployment insurance, administration of labor laws.

Publications Nos. 1-11 (1908-1910) and the *American Labor Legislation Review*, issued quarterly since 1911, contain the proceedings of the annual meetings, annual reviews of labor legislation, comparative digests, results of investigations and other papers, and also the proceedings of special conferences called by the association, viz: First national conference on industrial diseases, Chicago, June, 1910 (Publication No. 10); Chicago conference on prevention and reporting of industrial accidents, September, 1911 (v. 1, No. 4); second national conference on industrial diseases (jointly with American Medical Association), Atlantic City, June, 1912 (v. 2, No. 2); first national conference on social insurance, Washington, June, 1913 (v. 3, No. 2); first and second national conferences on unemployment, February and December, 1914 (v. 4, No. 2, and v. 5, No. 2); second national conference of health insurance commissioners, 1918 (v. 8, No. 2). A summary of association activities, 1906-1914, forms volume 4, No. 4.

The American section of the International Association on Unemployment was first organized in 1911 as a special committee of this association, and has since worked in close affiliation with it. Under its auspices a report on "The relation of irregular employment to the living wage for women" (in v. 5, No. 2, p. 287-418), was prepared for the New York State Factory Investigating Commission, and an unemployment survey was made, 1914-15, (v. 5, No. 3).

The results of an unemployment survey, 1920-21, made by the association are published in the September, 1921, issue of the *American Labor Legislation Review* (v. 11, No. 3, p. 189-219).

AMERICAN ASSOCIATION OF ENGINEERS.

63 East Adams Street, Chicago, Ill. C. E. Drayer, Secretary.

Incorporated under the laws of Illinois in 1915, this association now has about 25,000 members (entrance fee, \$10; annual dues, \$15), with 188 chapters and 75 clubs. It is devoted to the nontechnical interests of engineers, such as the standards of professional ethics, enactment of engineers' license laws, participation of engineers in public affairs, engineering education, adequate professional remuneration, employment opportunities. It conducts the Engineering Service Bureau, a cooperative employment service for its members.

On November 12, 1920, the Employment Council of the association held at Chicago a conference on employment and education, attended by educators, engineers, and employment managers, at which personnel work was one of the principal subjects of discussion. A partial report of its proceedings has been published in pamphlet form.

The Federal Department of the association in 1921 prepared a report on engineers' salaries in the Government service, which was presented at the hearing before the Senate Committee on Civil Service on the pending reclassification bills. A progress report of the Committee on Fees and Services of Practicing Engineers was submitted to the association in March, 1921, and published. Other contributions to the study of the remuneration of engineers have appeared in *Professional Engineer*, published monthly as the official organ of the association.

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS.

Post office box 4061, West Philadelphia Station, Philadelphia, Pa. Francis D. Patterson, M. D., secretary-treasurer.

Organized at Detroit, Mich., in 1915 to foster the study and discussion of the problems peculiar to the practice of industrial medicine and surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the medical care of employees; and to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession. There are 565 members (annual dues, \$5). Meetings are held annually.

The official organ of the association, in which its proceedings are published, is *The Nation's Health* (prior to May, 1921, called *Modern*

Medicine), issued monthly since May, 1919 (Modern Hospital Publishing Co., 22 East Ontario Street, Chicago, Ill., \$3 a year). This journal has a department "Medicine and industry" (edited by Otto P. Geier, M. D.) in each issue.

AMERICAN CHEMICAL SOCIETY.

COMMITTEE ON OCCUPATIONAL DISEASES IN THE CHEMICAL TRADES.—Prof. Charles Baskerville, College of the City of New York, chairman. The original committee was appointed by the New York section of the American Chemical Society in February, 1912, and in the following year the parent society appointed the present committee to better conditions of labor in chemical industry through (1) developing the interest of the manufacturers, (2) cooperation on obtaining uniform legislation in the different States and municipalities, and (3) bringing about a limited degree of publicity mainly among chemists. The committee has cooperated with boards of health and bureaus of labor in their investigations and has aided in formulating uniform legislation, especially in connection with the use of wood alcohol.

A symposium on occupational diseases in the chemical trades by the committee was published in the *Journal of Industrial and Engineering Chemistry* (v. 8, No. 11, November, 1916, p. 1054-1067). Its annual reports for 1920 and 1921 have appeared in the same journal (v. 12, No. 5, May, 1920, p. 439-440; v. 13, No. 6, June, 1921, p. 568-569).

Papers by the chairman of the committee describing its activities have been published in *Medicine and Surgery* (Sept., 1917), and *Modern Medicine* (v. 2, No. 5, May, 1920, p. 363-364).

RUBBER CHEMISTRY DIVISION, COMMITTEE ON ORGANIC ACCELERATORS.—A report of this committee calling the attention of manufacturers to the poisonous properties of certain organic accelerators used in the vulcanizing of rubber goods and recommending precautions to be taken for the protection of workers was printed in *Journal of Industrial and Engineering Chemistry* for October, 1918 (v. 10, No. 10, p. 865).

COMMITTEE ON COOPERATION BETWEEN THE UNIVERSITIES AND THE INDUSTRIES.—Prof. W. A. Noyes, University of Illinois, chairman. A report of this committee relating to the training of chemists for industrial work, cooperative investigations, and fellowships for research bearing on the problems of chemical industry was published in the *Journal of Industrial and Engineering Chemistry* for May, 1919 (v. 11, No. 5, p. 417). A brief report was recently submitted to the president of the society and will probably be published in the same journal during 1921.

AMERICAN COUNCIL ON EDUCATION.

818 Connecticut Avenue, Washington, D. C. Samuel P. Capen, director.

Organized in 1918 to take action on matters which are of common interest to the educational associations and institutions represented in it. The constituent or voting membership consists of 14 educational associations which are national in scope (annual dues, \$100).

In addition, it has as associate members 12 other learned societies having educational relations (annual dues, \$10). There is also a class of institutional members, which consists of 133 universities and colleges, contributing from \$100 to \$500 a year, according to the size of the institution.

The council has a standing Committee on Cooperation with Industries (Dean F. L. Bishop, University of Pittsburgh, chairman), which is to undertake, in conjunction with the Council of Management Education (see p. 99), to specify methods of training for college students who later intend to enter industrial enterprises.

Its standing Committee on Training of Women for Professional Service recently sent out a questionnaire to employment and vocational bureaus for women, requesting information as to scope of work, standards required, classification used, relation to organized personnel departments in industry, commerce, etc., personnel specifications prepared, use of general intelligence and special vocational tests, and other data. A preliminary report on the returns has been prepared by Miss Elizabeth Kemper Adams for publication in the January, 1922, issue of the *Educational Record* (published quarterly by the council since January, 1920).

AMERICAN DYES INSTITUTE.

130 West Forty-second Street, New York, N. Y. W. R. Corwine, secretary.

This institution is the association of dyestuff manufacturers in the United States.

COMMITTEE ON SANITATION AND SAFETY.—This committee was formed to prepare a safety code on nitro and amido compounds at the request of the American Engineering Standards Committee, laid before the institute by Dr. F. D. Patterson, chief of the Division of Hygiene and Engineering, Pennsylvania Department of Labor and Industry. A tentative draft was submitted, but was not considered entirely satisfactory. At the July, 1921, meeting of the institute the committee was reorganized and strengthened and instructed to perfect the safety code as soon as possible.

AMERICAN ELECTRIC RAILWAY TRANSPORTATION AND TRAFFIC ASSOCIATION.

8 West Fortieth Street, New York, N. Y. James W. Welsh, secretary.

Organized in 1908 as one of the affiliated associations of the American Electric Railway Association,¹⁰ for the consideration of general operating methods in detail, rules, freight and express time-tables, the hiring and training of employees, block signals, multiple-unit operation, and other matters relative to traffic and transportation.

COMMITTEE ON PERSONNEL AND TRAINING OF TRANSPORTATION DEPARTMENT EMPLOYEES.—James P. Barnes, chairman. The report of this committee presented at the annual convention, October 3 to 7, 1921, deals with the application blank, preliminary testing, medical examination, instruction, "breaking in," and written and oral examinations for new employees, and has been printed in pamphlet form.

¹⁰ This organization changed its name from American Street and Interurban Railway Association to American Electric Railway Association in 1910, and a corresponding change took place in the names of all of its affiliated associations.

Earlier reports may be found in the volumes of proceedings (e. g., 1912, p. 331-364; 1915, p. 285-301).

Standard employment, reference, and physical examination blanks adopted at the 1909 convention are furnished at cost by the American Electric Railway Association to member companies. A pamphlet containing samples of all of these forms may be obtained from the office.

AMERICAN ENGINEERING COUNCIL.

See Federated American Engineering Societies (p. 102).

AMERICAN ENGINEERING STANDARDS COMMITTEE.

29 West Thirty-ninth Street, New York, N. Y. P. G. Agnew, secretary.

Organized as the result of the work of a joint committee of the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, and American Society for Testing Materials, appointed December, 1916, to consider the formation of a central national body to serve as a clearing house for standards, the American Engineering Standards Committee held its first meeting in October, 1918. Originally it consisted of three representatives of each of the five societies above named; but in 1919 representatives of three Government departments—Navy, War, and Commerce—were added, and the constitution was revised to make provision for representation of other bodies of national scope interested in standardization, which may be either single organizations or groups of organizations. During 1920 the following bodies became represented upon it: United States Department of Agriculture; United States Department of the Interior; American Electrical Railway Association; National Safety Council; Society of Automotive Engineers; Electrical Manufacturers Council (representing Associated Manufacturers of Electrical Supplies, Electrical Manufacturers Club, Electric Power Club); electric light and power group (including Association of Edison Illuminating Companies, National Electric Light Association); fire-protection group (including Associated Factory Mutual Fire Insurance Companies, National Board of Fire Underwriters, National Fire Protection Association, Underwriters' Laboratories); gas group (including American Gas Association, Compressed Gas Manufacturers Association, International Acetylene Association).

The American Engineering Standards Committee itself, usually referred to as the main committee, is thus composed at present of 47 members, representing 17 bodies or groups of bodies, including 6 national engineering societies, 5 Government departments, and 13 national industrial associations. Its work is supported at present by the dues of the member bodies, \$500 for each representative on the main committee (except in the case of Government departments, pending the enactment of legislation by Congress to enable them to contribute their share of the expenses).

The main committee is solely an administrative and policy-forming committee, and does not concern itself with technical details of any particular standard. It has formulated rules of procedure for the

development of standards to be approved by it, which, briefly summarized, are as follows: (a) A standard (or code) is assigned by the main committee to a "sponsor" which is any organization, whether represented on the main committee or not, considered capable of carrying out the work; (b) the sponsor organizes a thoroughly representative "sectional committee," subject to approval by the main committee; (c) the sectional committee prepares the standard (or code) and submits it to the sponsor, which after approving the final draft submits the standard to the main committee; (d) it is then published by the sponsor and, on approval by the main committee, is labeled "American standard," "Tentative American standard," or "Recommended American practice," according to circumstances and the nature of the standard. Provision is also made for the approval of standards adopted or in process prior to 1920, if they have been developed substantially in the same way or have, in actual practice, proven their right to become standards.

Besides the standardization of specifications and tests of engineering materials, equipment, parts of machinery, etc., a comprehensive program of industrial safety codes forms an important part of the committee's work. This was the outcome of conferences of organizations interested in the subject held by the United States Bureau of Standards on January 15 and December 8, 1919, to arrange for general cooperation in the work of developing safety codes and for the coordination of the work done by different agencies. The second conference, acting on the result of a mail vote, decided that the preparation of safety codes should be carried out under the auspices and rules of procedure of the American Engineering Standards Committee and requested this committee to invite the International Association of Industrial Accident Boards and Commissions, the Bureau of Standards, and the National Safety Council to appoint a safety codes committee, which should suggest a list of safety codes, priority of consideration, and sponsors for them. The organization and work of this National Safety Codes Committee was described in a paper by E. B. Rosa read before the 1920 meeting of the International Association of Industrial Accident Boards and Commissions (U. S. Bureau of Labor Statistics, Bulletin No. 281, p. 20-24).

Two safety codes in this program have now been formally approved by the main committee, viz:

U. S. Bureau of Standards. National safety code for the protection of the heads and eyes of industrial workers. 1st ed., Dec., 1920. (Bureau of Standards Handbook Series, No. 2.) Approved Jan. 20, 1921, as "Recommended American practice."

National Fire Protection Association. National electrical [fire] code. Regulations of the National Board of Fire Underwriters for electric wiring and apparatus. Edition of 1920. Approved Apr. 19, 1921, as "American standard."

Twenty-three other safety codes have been definitely assigned to sponsors, and the majority of these have reached (July, 1921) further stages in the process as indicated in the following table.

Code.	Sponsor.	Sectional committee.	Drafts prepared.
Aviation.....	{Bureau of Standards..... Society of Automotive Engineers.....}	.....	First draft.
Compressed air machinery.....	American Society of Safety Engineers.....	.....	.....
Construction.....	National Safety Council.....	Formed and approved	.....
Electric safety.....	Bureau of Standards.....	.....	Final draft (submitted).
Electric power control.	Electrical Safety Conference.....	.....	.....
Floor openings, railings, and toe-boards.	National Association of Mutual Casualty Companies.....	Formed.....	.....
Foundries.....	{National Founders Association..... American Foundrymen's Association.....}	Formed and approved.	Final draft (prepared).
Gas.....	{Bureau of Standards..... American Gas Association..... Grinding Wheel Manufacturers Association.....}	Formed and submitted.	First draft.
Grinding wheels.....	International Association of Industrial Accident Boards and Commissions.	Formed and approved.	Do.
Ladders.....	American Society of Safety Engineers.....	Formed and submitted.	Do.
Lighting.....	Illuminating Engineering Society.....	Formed and approved.	Do.
Lightning.....	{Bureau of Standards..... American Institute of Electrical Engineers.....}	.....	.....
Logging.....	Bureau of Standards.....	Formed and approved.	Do.
Machine tools.....	{National Machine Tool Builders Association..... National Workmen's Compensation Service Bureau..... American Society of Mechanical Engineers.....}	.....	.....
Power transmission...	International Association of Industrial Accident Boards and Commissions.	Formed and submitted	Do.
Paper and pulp.....	National Safety Council.....	Formed and approved.	.....
Power presses.....	do.....	do.....	.....
Refrigeration.....	American Society of Refrigerating Engineers.....	Formed and submitted.	Do.
Stairways.....	National Fire Protection Association.....	.....	.....
Sanitation.....	U. S. Public Health Service.....	Formed.....	.....
Textiles.....	{National Association of Mutual Casualty Companies..... National Safety Council.....}	.....	.....
Ventilation.....	American Society of Heating and Ventilating Engineers.....	.....	.....
Woodworking.....	{International Association of Industrial Accident Boards and Commissions..... National Workmen's Compensation Service Bureau.....}	Formed and submitted.	Do.

Sponsors for the following codes have been recommended by the National Safety Codes Committee and approved by the main committee but definite assignments have not yet been made for the reasons indicated:

(a) Not yet accepted by proposed sponsors: Steam boilers (American Society of Mechanical Engineers); explosives (Institute of Makers of Explosives); nonfired pressure vessels (American Society of Mechanical Engineers); tanneries (Tanners' Council); blast furnaces (National Safety Council, conditional on mining); blooming and rolling mills (National Safety Council, conditional on mining).

(b) Accepted by sponsors but manufacturers objected: A combined electric fire and safety code under the joint sponsorship of National Fire Protection Association and Bureau of Standards.

(c) Declined by proposed sponsor: Industrial power control (Electrical Safety Conference).

The main committee has not yet approved the following recommendations for sponsorships made by the National Safety Codes Committee:

Cranes (Association of Iron and Steel Electrical Engineers); elevators and escalators, locomotive boilers (American Society of Mechanical Engineers); boiler-room equipment and operation, conveyors and conveying machinery, internal-combustion engines, engine-room equipment and operation, steam engines and turbines (American Society of Mechanical Engineers, conditionally); nitro and amido compounds (American Dyes Institute); electricity in mines, storage-battery locomotives for use in gaseous mines, portable electric mine lamps (U. S. Bureau of Mines).

A four-page circular of "Suggestions on form and arrangement of safety codes," issued by the main committee, shows also the method of selecting the personnel of the sectional committees which formulate the codes.

AMERICAN FEDERATION OF LABOR—Railway Employees' Department.
4750 Broadway, Chicago, Ill.

BUREAU OF RESEARCH.—Leland Olds, director. Established in the spring of 1920 to carry on the research necessary to supply information to officers of the department and to the locals, and to furnish data for hearings before the Railroad Labor Board, Interstate Commerce Commission, legislative committees, etc., on matters in which the railway shop employees' unions affiliated with the American Federation of Labor are interested.

The bureau has made job analyses of the work of car men to show the amount of skill required and has prepared material for other exhibits presented to the Railroad Labor Board in the hearings during the spring of 1921, e. g., those dealing with punitive overtime, seniority rules of the national agreement, the sanction of the eight-hour day, the recognition of human standards in industry, occupation hazard of railway shopmen, history of collective bargaining, and a study of cost of living and actual quantity food and rent budgets of a considerable number of railroad shop employees. It is also making a study of labor turnover and unemployment on a number of railroad systems.

A weekly digest of labor news is issued by the bureau to union officials of affiliated unions and to railroad lodges.

AMERICAN GAS ASSOCIATION.

130 East Fifteenth Street, New York, N. Y.

Formed June 6, 1918, by the union of the American Gas Institute (founded 1906) and the National Commercial Gas Association (founded 1905); incorporated 1919.

The association is joint sponsor with the United States Bureau of Standards for the gas safety code in preparation under the auspices and rules of procedure of the American Engineering Standards Committee. (See p. 74.) The first draft has been made.

ACCIDENT PREVENTION COMMITTEE.—Charles B. Scott, Bureau of Safety, 72 West Adams Street, Chicago, Ill., chairman. The functions of the committee are: To investigate preventable causes of accidental casualties and damage in the gas industry and to recommend methods, safe practices, and safety appliances for avoidance; to devise and promulgate plans for interesting and educating employees and the public in accident prevention; to be helpful to the

members of the association in their individual accident problems. The reports of the committee (1914-1920), containing analyses of accidents reported to it, and rules and precautionary measures recommended, are included in the Proceedings of the association (and of the American Gas Institute) and also issued separately.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS.

29 West Thirty-ninth Street, New York, N. Y.

Organized in 1871 as the American Institute of Mining Engineers and incorporated 1905. The American Institute of Metals became the Institute of Metals Division of this organization July, 1918, and the name was changed to the present form February, 1919. The number of members (1921) is 9,345. The annual meeting is held in New York on the third Tuesday in February.

COMMITTEE ON INDUSTRIAL RELATIONS.—T. T. Read, United States Bureau of Mines, Washington, D. C., secretary. This committee, created for the purpose of keeping the institute in touch with developments in the field of industrial relations, has organized eight subcommittees dealing with the following subjects: Americanization, cripples in industry, prevention of illness, safety, education, mental factors in industry, housing, employment. Reports are presented at the annual meetings and have been printed for 1919-1921 in the Transactions (v. 60, p. 810-814), and in the institute's monthly publication, Mining and Metallurgy for August, 1920 (p. 8-11) and April, 1921 (p. 11-17). The subcommittee on mental factors in industry is the only one which has promoted any original research, viz, the investigation in its field provided for by Engineering Foundation (see p. 102).

Sessions devoted to personnel problems have been held at each annual meeting, 1918 to date. The papers and discussions at these sessions in 1918 and 1919 appear in the Transactions (v. 59, p. 590-662, and v. 60, p. 748-818).

AMERICAN MEDICAL ASSOCIATION.

535 North Dearborn Street, Chicago, Ill. Alexander R. Craig, secretary.

The Scientific Assembly of the American Medical Association does not provide a special section on industrial medicine and surgery, but papers on subjects in this field are presented at each annual meeting in the different sections of the Scientific Assembly, e. g., medical topics in the Section on Practice of Medicine, surgical topics in the various sections dealing with surgery, public health, and medico-sociological questions in the Section on Preventive Medicine and Public Health.

Occasionally special sessions have been devoted to industrial medicine and surgery, e. g., the second national conference on industrial diseases was held jointly with the American Association for Labor Legislation at Atlantic City, June, 1912; in the annual meeting of 1915 the Section on Preventive Medicine and Public Health had a symposium on industrial sanitation; in 1918 the Orthopedic Section held a symposium on industrial surgery; two meetings of the Section on Miscellaneous Topics for the 1919 annual session were devoted to the presentation of a program on industrial medicine and surgery. Scientific contributions in this field are published from

time to time in the Journal of the American Medical Association (weekly).

In 1913-14 a Committee on Conservation of Vision appointed by the association prepared and published "Conservation of vision series, Pamphlets 1-20," of which No. 14 is "Visual requirements of transportation employees," by J. J. Carroll (14 p.).

The report of the Committee on the Ultraviolet and Visible Transmission of Eye-Protective Glasses, appointed by the Section on Ophthalmology, was presented in 1920 and printed in the section's transactions.

AMERICAN MUSEUM OF SAFETY.

See Safety Institute of America (p. 149).

AMERICAN POSTURE LEAGUE.

1 Madison Avenue (Metropolitan Tower), New York, N. Y.
Henry Ling Taylor, M. D., secretary.

A national health organization organized in 1913 and incorporated the following year to do scientific and educational work in the standardization and improvement of conditions affecting the posture of the human body.

While the principal activities of this organization have been in the field of personal, public, and school hygiene, its technical committee on seating has made anatomical studies for the improvement of the design of chairs, stools, etc., for industrial establishments and offices, so as to promote correct posture and help to eliminate fatigue. An article by the secretary on "Seating of industrial employees" in a recent issue of *Modern Medicine* (v. 3, No. 3, Mar., 1921, p. 164) gives the results of the league's studies on this subject. An account of its other activities appears in the December, 1920, number of the same periodical (p. 777-779).

Lists of reprints of articles on posture, wall charts, lantern slides, and other educational material issued by the league may be obtained on application.

AMERICAN PSYCHOLOGICAL ASSOCIATION.

Edwin G. Boring, Clark University, Worcester, Mass., secretary.

Organized in 1892 for the advancement of the interests of psychology as a science. Meetings are held annually in the last week of December. The proceedings, with abstracts of papers read, are published in an association number of the *Psychological Bulletin* every year.

At each annual meeting recently a considerable number of papers have been presented relating to intelligence tests and other subjects in the field of personnel research, e. g., at the Chicago meeting 1920 a joint session with the Section of Psychology and Section of Education of the American Association for the Advancement of Science, devoted to intelligence tests, was held December 29 (*Psychol. Bull.*, v. 18, No. 2, February, 1921).

In 1906 a Committee on the Standardizing of Procedure in Experimental Tests, under the chairmanship of Prof. James R. Angell, was appointed to act as a general control committee on the subject of measurements. Its work is represented by the following reports:

Report of the committee . . . on the standardizing of procedure in experimental tests. 1910. 107 p. (*Psychol. Monographs*, v. 13, No. 1, whole No. 53.)

Association tests, by R. S. Woodworth and F. L. Wells. 1911. 85 p. (Psychol. Monographs, v. 13, No. 5, whole No. 57.)

In December, 1916, a Committee on the Academic Status of Psychology published as its report:

Baldwin, B. T. A survey of psychological investigations with reference to differentiation between psychological experiments and mental tests. Swarthmore, 1916.

The work of the association and its committees during the war, in connection with the establishment of the Army psychological service for intelligence testing and the study of special psychological problems relating to various military activities, is described in Robert M. Yerkes' presidential address, December, 1917, "Psychology in relation to the war" (Psychol. Rev., v. 25, No. 2, March, 1918, p. 85-115) and in his "Report of the Psychology Committee of the National Research Council" (its Reprint and circular series, No. 2; from Psychol. Rev., v. 26, No. 2, March, 1919, p. 83-149). The report of the Committee on Reeducation Research (S. I. Franz, Government Hospital for Insane, chairman) was published in December, 1917 (Psychol. Bull., v. 14, No. 12, p. 416 ff.).

At the December, 1920, meeting a standing Committee on Certification of Consulting Psychologists was created, following the presentation of a printed report of a special committee previously appointed to investigate the question.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Penn Terminal Building, Seventh Avenue and Thirty-first Street, New York, N. Y. A. W. Hedrich, secretary.

Organized in 1872, for the advancement of sanitary science and promotion of organizations and measures for the practical application of public hygiene. There are now seven sections: Laboratory, Vital statistics, Public health administration, Sociological, Sanitary engineering, Industrial hygiene, Food and drugs. Meetings are held annually at time and place determined by the board of directors. The fiftieth annual meeting will be held in New York City, November 14-18, 1921, and it is proposed to have a health institute in connection with it.

The *American Journal of Public Health* is the official monthly publication of the association, in which its proceedings and papers presented before its sections are published. This periodical has a department on industrial hygiene and occupational diseases, consisting of abstracts of current literature, conducted by E. R. Hayhurst, and E. B. Starr. The A. P. H. A. News Letter, issued the 8th of each month, contains personal notes, public health news, etc. The issue for May, 1921, contains a complete list of the committees of the association, giving their personnel, scope, activities, and plans.

SECTION ON INDUSTRIAL HYGIENE.—Dr. W. A. Sawyer, 343 State Street, Rochester, N. Y., secretary. This section was organized in 1914 and now has about 100 members. A sketch of the development of industrial hygiene and protective legislation is being prepared by Dr. George M. Kober to form part of a special volume of papers to commemorate the fiftieth anniversary of the foundation of the association.

SECTION ON VITAL STATISTICS.—At the 1917 meeting this section appointed a special Committee on Industrial Morbidity Statistics,

consisting of representatives of the United States Public Health Service, statisticians interested in industrial morbidity, employment and welfare managers in industry, and organized labor, which formulated a standard plan for recording and reporting sickness among employees and recommendations for tabulation and analysis by the United States Public Health Service. Its reports at the annual meetings in 1918 and 1919 were published as Reprints No. 484 and 564 from the Public Health Reports (v. 33, No. 35, p. 1429-1434; v. 34, No. 42, p. 2289-2294), and the details of the plan were presented to industrial establishments and sick benefit associations by the United States Public Health Service in Reprint No. 573 from the Public Health Reports (v. 34, No. 46, November 14, 1919, p. 2593-2604), entitled "Sickness records for industrial establishments." The committee has been continued by the section as the standing Committee on Morbidity Reports and Mortality Statistics in Industry (Louis I. Dublin, Metropolitan Life Insurance Co., New York, chairman, to cooperate with the United States Public Health Service.

LABORATORY SECTION.—The Committee on Standard Methods for the Examination of Air, appointed by this section, made four reports on methods for use in ventilation studies, which have been published as follows: First (preliminary), 1909, *Amer. Jour. Pub. Hyg.* v. 20, p. 346; second (preliminary), 1912, *Amer. Jour. Pub. Health*, v. 3, p. 78; third (final), 1916, *idem*, v. 7, p. 54; fourth (supplementary), 1919, *idem*, v. 10, p. 450. It is now merged in the Committee on Standard Methods (Roger G. Perkins, Western Reserve Medical School, Cleveland, chairman), which has been substituted for the separate committees on particular standards.

AMERICAN RAILWAY ASSOCIATION.

30 Vesey Street, New York, N. Y. J. E. Fairbanks, secretary.

The object of this association is the discussion and recommendation of methods for the management and operation of American railways. Its membership consists of common carriers which operate American steam railways.

COMMITTEE ON TRANSPORTATION.—This standing committee examines into and reports upon questions affecting transportation, such as train rules, rules for the operation of interlocking and block signals, etc.

COMMITTEE ON THE SAFE TRANSPORTATION OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES.—This committee has formulated rules on the subject indicated in its title. The Bureau of Explosives, maintained by the association at its headquarters, receives reports of accidents due to explosives and investigates them.

The rules above noted are printed in the "Rule book" of the association, which includes also "Code of rules governing the determination of physical and educational qualifications for employees—Operating department," adopted April, 1906 (edition of March, 1917, p. 391-410).

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

29 West Thirty-ninth Street, New York, N. Y.

Organized in 1894 for the promotion of the arts and sciences connected with heating and ventilating in all branches, the society now has local chapters in Illinois, Kansas City, Massachusetts,

Michigan, Minnesota, New York, Western New York, Ohio, Eastern Pennsylvania, Pittsburgh, and St. Louis. The annual meeting is held in New York, beginning the fourth Tuesday in January; semi-annual professional sessions are held at time and place determined by the council. Annual dues, \$10; initiation fee, for members and associates, \$15; for junior members, \$10.

The society is sponsor for the ventilation code to be prepared under the auspices and rules of procedure of the American Engineering Standards Committee (see p. 72).

RESEARCH LABORATORY at United States Bureau of Mines Experiment Station, Pittsburgh, Pa.—L. A. Scipio, director of research. Established under an agreement for cooperation in certain investigations between the United States Bureau of Mines and the society, executed in July, 1919, by which the bureau furnishes at its Pittsburgh plant the necessary office and laboratory space, light, power, heat, water, and other general facilities, and the services of certain engineering assistants, and the society provides the salaries of the director of research, assistant director, and such other assistants as may be required, expending not less than \$15,000 in each year. The work is under the supervision of a standing Research Committee with a subcommittee of five, the Subjects Committee, to determine the subjects on which research shall be undertaken. Official reports of the Research Laboratory are published in the Journal of the society (monthly, except February, June, and August) and papers containing the results of the investigations are presented at research sessions of the society's meetings.

The program of work in progress includes two series of investigations in the field of industrial hygiene: (1) Standardization of dust measurements, and (2) temperature, humidity, and air motion effects on health. In the first-mentioned series three papers have been published in the Journal, viz: Theory of dust action, by O. W. Armspach (in v. 26, No. 9, December, 1920, p. 819-829); Efficiency of the Palmer apparatus (in v. 26, No. 8, November, 1920, p. 687), and of the sugar tube (v. 27, No. 2, March, 1921, p. 119-123) for determining dust in air. In the second group, a study of the relation of wet-bulb temperature to health, by O. W. Armspach, was published in the Journal for May, 1920. An investigation of the effect of humidity and temperature on the human system undertaken by Prof. F. B. Rowley at the University of Minnesota, forms part of a program of cooperative research between universities and colleges and the Research Laboratory, which is an important feature of the plan of the Research Committee. Similarly a study of certain ventilation problems is being made in cooperation with the Minneapolis school board.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

29 West Thirty-ninth Street, New York, N. Y. Calvin W. Rice, secretary.

Organized in April, 1880, for the promotion of the arts and sciences connected with engineering and mechanical construction. There are now local sections in 42 cities and 11 professional sections, viz, Aeronautics, Cement, Fuel, Gas power, Machine shop, Materials handling, Management, Ordnance, Power, Railroads, Textiles.

A session on industrial relations was held at the Detroit meeting, June, 1919; the papers (Nos. 1692, 1693) and discussion thereon are found in the Transactions of the society (v. 41, p. 145-208). A number of other papers on personnel matters have been presented before the society from time to time and published in its Transactions or in Mechanical Engineering. Some of these are available in pamphlet form, e. g., on labor turnover (Nos. 1624-1648), woman workers, Nos. 1627, 1628), labor dilution (No. 1671), industrial organization (No. 1672), industrial unrest (No. 1721a), mutual control of industry (No. 1721b), profit sharing (No. 1721c), wage payment (No. 1721d). A session at the annual meeting in 1918 was devoted to discussion of the crippled soldier problem (Jour. Amer. Soc. Mech. Eng., v. 40, p. 51-61).

A number of papers on industrial safety and accident prevention have been published in the Transactions, some of which are available in pamphlet form (e. g., Nos. 1510-1513, 1523, 1572, 1597, 1598, 1625, 1631).

On the invitation of the American Society of Mechanical Engineers, delegates of a number of engineering societies met in New York, May 6, 1921, to discuss plans for a congress of engineers allied to the mechanical engineers to consider education in industry, embracing (1) education of engineers and higher executives, (2) education of foremen and department heads, (3) education of workers, (4) the modification of college courses to cover the requirements of industry, and (5) revision of textbooks. It was decided to hold an engineers' congress on industrial education along the lines suggested, the program and arrangements being left to an executive committee (W. Herman Greul, Engineers' Club, 32 West Fortieth Street, New York, secretary). The meeting will probably take place in the spring of 1922.

MANAGEMENT DIVISION.—Organized as the Management Section October 15, 1920, this division now has an enrollment of approximately 1,000 members and holds sessions at the spring and annual meetings of the society devoted to management topics. It has taken the initiative in the establishment of a joint Committee on Management Terminology, including, besides its own, representatives from the Society of Industrial Engineers, Industrial Relations Association of America, National Association of Cost Accountants, Taylor Society, and American Institute of Accountants.

SAFETY CODE COMMITTEE.—C. B. LePage, secretary. For some time the society has been engaged in the development of safety codes by representative committees. An elevator safety code has recently been completed and is to be issued shortly. The society is joint sponsor for the safety code for mechanical transmission of power being prepared under the auspices of the American Engineering Standards Committee (see p. 72) and is represented on the following sectional committees which are drafting safety codes: Floor openings, railings, and toe boards; Grinding machinery; Industrial lighting code; Ladders; Logging and sawmill machinery; Machine tools; Paper and pulp mills; Power presses. It has also been nominated as sponsor for various other codes but has not yet accepted these sponsorships.

This committee, now being organized to take the place of the Committee on Protection of Industrial Workers, is to be a standing committee of five men who will direct the safety-code activity of the society in the future, acting in an advisory capacity to the council on such matters and taking charge of the organization of all new sectional committees on safety codes for which the society may accept sponsorship or joint sponsorship.

BOILER CODE COMMITTEE.—C. W. Obert, secretary. In 1914 the committee prepared and issued the A. S. M. E. boiler code and a revised edition was published in 1918 (147 p.). It contains standard specifications for the construction, equipment, and use of steam boilers and has been adopted officially by many States as well as by many boiler-insurance companies, boiler manufacturers, and consulting engineers. The committee meets monthly and formulates "Interpretations of the boiler code, 1918 edition," which are published in data sheet form with index.

AMERICAN SOCIETY OF REFRIGERATING ENGINEERS.

154 Nassau Street, New York, N. Y.

REFRIGERATION REGULATION COMMITTEE.—William H. Ross, chairman. This committee, charged with the preparation of the mechanical refrigeration code for which the society is sponsor under the auspices of the American Engineering Standards Committee, has recently sent out to members of the society and others interested an advance proof of the proposed safety code for suggestions for its improvement. The code is not to be published until it has been approved by the council and members of the American Society of Refrigerating Engineers and by the American Engineering Standards Committee.

AMERICAN SOCIETY OF SAFETY ENGINEERS.

29 West Thirty-ninth Street, New York, N. Y.

Organized in May, 1911, as the United Association of Casualty Inspectors; reorganized and incorporated under present name in 1915, so as to admit to membership any person actively engaged in safety work, whether in manufacturing plants, insurance companies, State labor departments or rating boards.

The constitution of the society provides for a Research Committee, a Standards Committee, and a Codes and Legislative Committee. Of these the Research Committee has not been appointed for the current year. The Standards Committee, which is concerned with the formulation and revision of safety standards, is at present investigating certain rules for safety in building construction referred to the society by the New York State Department of Labor. The Codes and Legislative Committee seeks to have the results of the Standards Committee's work incorporated in codes and legislation to which they are pertinent. These two committees jointly are interested in a national safety code on ladders now being prepared by a sectional committee formed by the society which is sponsor for it under the auspices of the American Engineering Standards Committee. (See p. 74.) In September, 1921, the society was also designated as sponsor for the safety code on compressed-air machinery.

In 1919 *Safety Engineering* (published monthly by the Safety Press, 80 Maiden Lane, New York City) was adopted as the official

organ of the society, and papers and proceedings of the meetings are published in this magazine.

ASSEMBLY OF CIVIL SERVICE COMMISSIONS.

R. P. Van Hook, city civil service commission, Colorado Springs, secretary.

Organized 1906 to promote acquaintance among administrators of civil-service laws, to exchange information and views concerning the principles and methods of public employment, and to increase public knowledge of procedure tending to improve and perfect the merit system. The assembly met biennially 1906 to 1910; since then it has held annual meetings in June of each year at various places.

The published volumes of the reports of proceedings include in recent years papers and discussions on the following subjects: (1915) Elimination of applicants on preliminary requirements; (1917) efficiency records, standard forms of examinations; (1918) promotion examinations, psychological tests, methods of removal, oral tests, physical examination, service record systems; (1919) examination for occupation of clerk, trade tests, examinations for probation officer, weight given to experience, methods of rating personal qualifications, training and experience, appeals of candidates from ratings, preference to veterans, woman's place in civil service; (1920) classification of public employment. Many of these are comparative studies of the methods and practices of the various civil-service commissions throughout the country.

Various problems have been studied by special committees whose reports appear in the proceedings of the annual meetings. In 1916 the following committee reports were published separately:

Draft of a standard civil-service law embodying the essential principles of a practical merit system of public employment. 18 p.

Report of committee on cooperation among commissions on examination standards. 31 p.

First report of the committee on efficiency record systems. 56 p.

The final report of the last-named committee is printed in the 1917 volume of proceedings, which contains also the report of the Committee on Advancement in the Public Service. In 1919 the report of a Committee on Cooperation of Appointing Officers was submitted.

At the 1920 meeting a plan for a new personnel research agency was outlined in the report of the Committee on the Establishment of a National Service Bureau of Civil Service Standards. The functions of this proposed bureau would be:

To conduct investigations in order to determine the true essentials of examination tests; to determine how best to discover, through appropriate tests, the abilities, capacities, and aptitude requisite for the performance of specific public service; to have supervisory direction over research work in special problems relating to civil service, which may be carried on by universities, organizations, or individuals interested in such problems of governmental activities; in short, to act as a clearing house for civil-service examination practice and procedure.

ASSOCIATED INDUSTRIES OF MASSACHUSETTS.

1034 Kimball Building, 18 Tremont Street, Boston 9, Mass.

A manufacturers' association embracing in its membership 1,045 manufacturers in all lines of industry having plants in Massachusetts organized to solve their common problems.

INDUSTRIAL SERVICE DEPARTMENT.—H. O. Stetson, secretary. Staff experts in industrial relations, employment management and safety are employed for full-time service to members. Two secretaries are devoting full time to the promotion of Americanization activities within the factories. In cooperation with the Bureau of Vocational Guidance at Harvard University the preparation of a series of special texts for teaching English to aliens employed in industries was undertaken in 1919–20. Each text consists of loose-leaf lessons dealing with the processes of a particular industry, into which safety precautions are also introduced. An account of this investigation is given in an article entitled, "Preparing industrial English lessons," by George F. Quimby and Charles H. Paull, in *Industrial Management*, March, 1920. The following have been completed and published:

Quimby, George F., and Paull, Charles H. English of leather making; industrial lessons for adult English classes of tannery workers. 1919. 24 p.

Paull, Charles H. English of paper making; lessons for adult English classes. 1920. 28 p.

The first Massachusetts accident prevention congress was held at Worcester in 1920 under the joint auspices of this organization and locals of the National Safety Council. Its proceedings have been published.

ASSOCIATION FOR THE PREVENTION AND RELIEF OF HEART DISEASE.

325 East Fifty-seventh Street, New York, N. Y. Miss M. L. Woughter, executive secretary.

Incorporated December 18, 1915, to coordinate the agencies already dealing separately with the various phases of relief for patients suffering from heart disease, and to provide an organization to initiate measures of prevention.

The association considers that the vocational training of children in suitable trades, and the adjustment of the adult heart cripple to some form of labor which is within his physical limitations are among the most important of relief measures, from both a medical and an economic standpoint. It has accordingly made a study of the kinds of work which are suited to the limited capacities of those suffering from heart disease and has published a folder on "Occupations for cardiacs" for popular distribution. The placement work which it started is now continued through the special bureau for cardiacs established by the Bureau for the Handicapped of the Hospital Social Service Association of New York City.

A fund has recently been given for the purpose of making a survey of all the cardiacs for whom occupations have been secured. The following questions are to be investigated: (1) Ability of the individual to continue at work in the job secured; (2) whether the work presents features unexpectedly taxing; (3) whether the cardiac keeps in touch with his own physician or one of the cardiac clinics; (4) present state of health; (5) the need for occasional rest, either at home or in an institution, to prevent a breakdown.

A Committee on Research and Scientific Work and a Committee on Vocational Guidance and Occupation are included among those recently organized. Further information as to the association's

activities is given in its first report for the period December 18, 1915, to January 1, 1921.

The work has been supported by annual dues of members and donations, particularly from the Burke foundation. In the spring of 1920, when the Trade School for Cardiac Convalescents (founded 1912) was dissolved, its endowment fund of \$7,000 was transferred to the association.

ASSOCIATION OF COLLEGIATE SCHOOLS OF BUSINESS.

Dean L. C. Marshall, School of Commerce, University of Chicago, president.

Organized in 1918 for the promotion and improvement of higher business education in North America, this association is composed of institutions giving collegiate business training of a certain grade and type. It has at present 19 members (annual dues, \$25). Institutions may be admitted, on recommendation of the executive committee, by a two-thirds vote of the members represented and voting at an annual meeting (generally held in May).

Several of the papers presented at the meetings have been published in the *Journal of Political Economy* issued by the University of Chicago. At the third general meeting, held May 5 to 7, 1921, at the University of Pittsburgh, a separate session was devoted to "Courses in the labor field." Of the two papers presented at this session, "The problem of graduate training in personnel administration," by Ordway Tead, appears in the *Journal of Political Economy* for May, 1921 (p. 353-367), and "Undergraduate instruction in labor problems," by Joseph H. Willits, is announced among forthcoming articles.

The association has a Committee on Coordination with Corporation Training Schools.

ASSOCIATION OF GOVERNMENTAL LABOR OFFICIALS OF THE UNITED STATES AND CANADA.

Miss Linna E. Bresette, Industrial Welfare Commission, Topeka, Kansas, secretary-treasurer.

Formed at Nashville, Tenn., in June, 1914, by amalgamation of the International Association of Factory Inspectors (organized 1887) and the Association of Chiefs and Officials of Bureaus of Labor (organized 1883), which had held joint conventions from 1910. The membership of this association consists of employees of Federal, State, provincial, county, or municipal departments having to do with the enforcement and supervision of labor laws. The annual dues of departments are determined upon the following basis: When the department staff consists of 1 to 5 persons, \$5; 6 to 25 persons, \$10; 26 to 75 persons, \$15; and where the staff exceeds 75 persons, \$20. Meetings are held annually, the place being decided upon at the preceding convention and the time fixed by the executive committee.

The Proceedings of the annual conventions contain papers and discussions on labor topics (e. g., in 1920, apprenticeship, child labor and vocational education, women in industry, safety, and compensation). Since 1918 they have been published by the United States Department of Labor; the Proceedings of the seventh annual convention, July 12-15, 1920, were issued as Bulletin No. 266 of the United States Bureau of Labor Statistics.

BALTIMORE FEDERATION OF CLOTHING MANUFACTURERS.

Room 503, 5 Hopkins Place, Baltimore, Md.

The principal aim of this federation is unified action on questions of wages, hours of labor, and general working conditions. The labor managers, comprising the Board of Labor Managers of the Baltimore Market, meet regularly three times a week for the purpose of interchanging information on labor problems confronting them, to work out common labor policies, and to secure unified action in labor matters. The federation also aims to establish standards of production and is studying the factors contributing to efficient production, among which are: (1) Industrial relations, (2) planning of work, (3) proper lay-out of factories, (4) suitable appliances for the workers in their various tasks, etc. It is also studying the general situation in the men's clothing industry with a view to obviating as far as practicable the seasonal character of the industry and periodical unemployment.

RESEARCH BUREAU.—This bureau, formerly known as the Clothiers' Research Bureau, is now a part of the federation and is under the direction of the secretary. It conducts such investigations and compiles such information as may be necessary for the general improvement and standardization of working conditions in the Baltimore Market. It keeps on file a complete list of current piece and week rates, with a description of each operation as performed in each house, which is used constantly by members in setting piece rates and in settling disputes over prices. It collects regularly records of the earnings of the workers, which serve as a basis for discussions by the employers and the union; they show actual earnings by occupation groups for given pay-roll weeks, and are comparable with earning figures from other markets, earnings in other industries, and cost-of-living figures. Several extensive wage studies were prepared for presentation before boards of arbitration during the past year.

A manual or handbook of tailoring, containing a detailed analysis of the operations and processes used in the manufacture of clothing, has been completed recently. The purpose of this work is to lay the basis for standardized manufacturing processes for the industry as a whole, to afford a framework upon which any factory can base its own system of standardization, to train nontechnical men to be clothing executives, to furnish a standard nomenclature and basis for fixing piece rates and to set up a standard by which industrial disputes of a technical nature may be settled.

This office prepares and sends out regularly to members Labor News Bulletins containing digests of important decisions, piece rates, and labor news from other markets, etc. It also maintains a library and classified files of clippings on subjects of interest to the clothing industry.

BOSTON CHAMBER OF COMMERCE—Retail Trade Board.

177 Milk Street, Boston 9, Mass. Arthur James Kelly, secretary.

The Retail Trade Board, which is the merchants' section of the Boston Chamber of Commerce, has a Personnel Group composed of the personnel managers of some of the larger stores in the city. A subcommittee of this group recently made an investigation of absenteeism and tardiness by questionnaire to its members and submitted a brief report December 3, 1920.

BUREAU OF APPLIED ECONOMICS.

Southern Building, Washington, D. C. Hugh S. Hanna, director.

Organized 1914 by W. Jett Lauck and incorporated 1919 under the laws of Virginia, this bureau is a private organization established for the purpose of doing research and statistical work in the field of industrial, commercial and general economic activities. Its labor research work has included compilations of data regarding prices, cost of living, wages, and other statistical information (e. g., for use in labor cases before wage boards, etc.), original investigations of industrial and commercial conditions, plant and industrial surveys, memoranda on industrial and labor legislation.

The following bulletins are the latest issues of its printed compilations:

Changes in cost of living and prices, 1914 to 1920. 24 p.

Wages in various industries and occupations: a summary of wage movements, 1914 to 1920. 65 p.

Standards of living: a compilation of budgetary studies. Rev. ed. 1920. 156 p.

The bureau has prepared a limited number of mimeographed copies of a "Handbook of industrial relations and conditions" (722 p.), containing digests of the more important laws, programs, and experiences in the field of industrial relations. It has also brought together all of the awards, actions, and pronouncements of the National War Labor Board, using printed copies where available and reproducing the others in typewritten form from the original docket of the board, in a compilation "National War Labor Board Docket" (5 vols.). A price list may be obtained on application.

BUREAU OF EDUCATIONAL EXPERIMENTS.

16 West Eighth Street, New York, N. Y. Jean Lee Hunt, in charge of department of information.

The only work done by this bureau related to the field of personnel research is the testing of undernourished children with a view to discovering whether any correlation could be established between the condition of malnutrition and mental ability. An interim report on the investigation appeared in the Pedagogical Seminary for March, 1920, in an article by David Mitchell and Harriet Forbes entitled, "Malnutrition and health education." A more extensive report on the later work is to appear in "The nutrition class and health education," a publication of the bureau now in press. The results of this study are quite negative.

The bureau has issued the following reference list as its Bulletin 9:

Mitchell, David, and Ruger, G. J. Psychological tests: revised and classified bibliography. 1918. 116 p.

BUREAU OF INDUSTRIAL RESEARCH.

289 Fourth Avenue, New York, N. Y. Robert W. Bruère, director.

An incorporated voluntary association without profit organized in February, 1918, to promote sound human relationships in industry by consultation, fact studies, education, and publicity. It is maintained by fees received for professional services and by private contributions in support of its research program. The policy of the

bureau at the present time is increasingly to limit its research activities to work designed for the information of the public.

The following studies have been made by members of the staff and published by the bureau:

How the Government handled its labor problems during the war; handbook of the organizations associated with the national labor administration; with notes on their personnel, functions, and policies. 1919. 48 p.

American company shop committee plans; a digest of 20 plans for employees' representation. 1919. 38 p.

Workers' education: American and foreign experiments. By Arthur Gleason. 1921. 62 p.

Building guilds in Great Britain. By Ordway Tead. 1921. (Reprint of study published in *Journal of American Institute of Architects*, Feb., 1921.)

National councils in the printing trades. By Charles R. Walker, jr. 1921. 30 p. (Reprinted from *Monthly Labor Review*, U. S. Bureau of Labor Statistics, Feb., 1921.)

The open-shop drive. Who is behind it and where is it going? By Savel Zimand. 1921. 61 p.

A study of production standards in their relations to shop administration and wage payment plans is in preparation.

The bureau has made a labor survey of the tanning industry, covering 70 plants, for the Tanners' Council of the United States of America (see p. 155), personnel surveys of seven plants for the Business Problems Group of the Social Order Committee, Philadelphia yearly meeting of Friends, and other similar studies, and it has co-operated on a professional basis with industrial concerns in the development of their personnel organizations.

In 1919, members of the bureau's staff were retained by the Interchurch World Movement to organize the research plans of its Industrial Relations Department and to give technical assistance to the Commission of Inquiry into the steel strike. The following reports of this commission were prepared:

The Interchurch World Movement report on the steel strike of 1919. New York, Harcourt, Brace & Howe. 1920. 277 p.

Public opinion and the steel strike: supplementary reports of the Steel Strike Commission of Inquiry of the Interchurch World Movement. New York, Harcourt, Brace & Co. 1921. 346 p.

At the present time the bureau is conducting an extensive inquiry into the economics and administrative organization of the coal industry and has projected similar studies of other basic industries.

During 1918-1920 the bureau conducted courses in employment administration in cooperation with the New School of Social Research and the Training School for Public Service of the Bureau of Municipal Research. Owing to the growth of these courses, involving costs in excess of the bureau's resources, they have been discontinued as bureau activities, but members of the bureau have continued educational work in the field of personnel administration under other auspices.²¹

The industrial research library of the bureau is freely put at the service of the public.

²¹ Mr. Leonard Outhwaite at Columbia University (see p. 175), Mr. Ordway Tead at the New York School of Social Work (see p. 187) and the New School of Social Research (see p. 187); Mr. H. C. Metcalf at the Bureau of Personnel Administration (see p. 89). Messrs. Tead and Metcalf published in 1920 (McGraw-Hill Book Co., New York) a comprehensive study of personnel problems under the title "Personnel administration: its principles and practice" (538 p.).

BUREAU OF MUNICIPAL RESEARCH.

261 Broadway, New York, N. Y.

Incorporated in 1907 to promote efficient and economical government and the adoption of scientific methods in the transaction of public business.

The following studies relating to public employment and municipal salary standardization have been published in the series *Municipal Research*, issued by this bureau and the Training School for Public Service attached to it:

No. 67, Nov., 1915: The standardization of public employments. Part I. An interpretation. 121 p.

No. 68, Dec., 1915: Training for municipal service. 51 p.

No. 76, Aug., 1916: The standardization of public employments. Part II. Application. 128 p.

No. 95, 1921: Quantity and cost budgets for clerical workers in New York City, Apr., 1921, by W. E. Mosher. 30 p.

The bureau prepared a report for the Municipal Civil Service Commission of the City of New York on which was based the "Standards for physical examinations" published by the commission in 1916 (60 p.).

BUREAU OF MUNICIPAL RESEARCH OF PHILADELPHIA.

805 Franklin Bank Building, Philadelphia, Pa.

Organized experimentally in November, 1908, with the aid of a staff detailed from the New York bureau; incorporated as a separate institution in the fall of 1909. It is "an agency of 2,000 citizens co-operating in the effective discharge of civic duties, equipped to interpret and solve technical problems of government."

Among its recent activities is a field investigation of living standards and living costs of workingmen's families in all the more important industrial sections of the city, made during the period from August, 1917, to May, 1918. A report based on 260 schedules was published in 1919 (New York, Macmillan Co.) under the title "Workingmen's standard of living in Philadelphia" (x, 125 p.). Supplements to this, bringing the cost-of-living figures down to December, 1919, August, 1920, and March, 1921, respectively, were published as Nos. 393, 433 and 463, of *Citizens' Business* (issued weekly by the bureau).

BUREAU OF PERSONNEL ADMINISTRATION.

17 West Forty-seventh Street, New York, N. Y. Henry C. Metcalf, director.

The Educational Division offers four types of training: An eight-weeks' intensive course for industrial, commercial, and governmental employees; a year's cooperative course for qualified college graduates; a six weeks' summer course for teachers of industrial and commercial subjects, placement secretaries, and vocational advisers; and a series of evening lectures and discussions for professional men and women. Details are given in its Bulletin of Information, 1921-22.

The Division of Labor Analysis makes labor audits of industrial and mercantile establishments; and studies the problems involved in the employment of labor, health, safety, and working conditions, instruction and training, wages and other incentives, employees' relations, administrative policy, and executive organization. It has

carried on research resulting in articles on the following subjects which have appeared in various issues of the Industrial Information Service (Boston, Mass.): Personnel work and vacation policies in retail stores; joint councils on industrial relations; personnel administration in the National City Bank (New York); employees' training in a large corporation; safety—24 hours in the day; real wages—the cost of living; "family week"; strike insurance, etc. A paper on "Control of absenteeism," by P. S. Florence, was published in *Administration* (v. 1, No. 5, May, 1921, p. 634-646).

The bureau also conducts a placement service for supplying personnel directors, employment managers, industrial physicians and nurses, safety engineers, training directors, editors of employee magazines, job analysts and recreation directors to industrial and mercantile establishments.

BUREAU OF PERSONNEL RESEARCH.

See Carnegie Institute of Technology (p. 169).

BUREAU OF SAFETY.

Edison Building, 72 West Adams Street, Chicago, Ill. Charles B. Scott, director.

This bureau was incorporated March 2, 1915, and is supported by contracts which it has with its several public-utility company clients, particularly the Inter-Company Insurance Trusteeship of the Middle West Utilities Co. These contracts provide that the Bureau of Safety shall direct and supervise the accident prevention work of the several clients, which include light and power, street car, gas, ice and water companies.

Its service includes inspection (survey, analysis, and report of operating conditions, recommendations regarding operating hazards and accident hazards caused by physical condition of the plant, regular reinspection); organization of safety committees; statistics of accidents (compilation, analysis, charts); instructional and educational work (to committees and to employees, by lectures, shop bulletins for posting, safety bulletins for each employee).

The bureau makes studies of the effect of safety rules tentatively adopted and of contrivances devised by men working in the plants for their individual protection. It is also engaged in an investigation of psychological tests for motormen.

Its director is chairman of the accident prevention committees of the National Electric Light Association and the American Gas Association.

BUREAU OF VOCATIONAL GUIDANCE.

See Harvard University (p. 178).

BUREAU OF VOCATIONAL INFORMATION.

2 West Forty-third Street, New York, N. Y. Miss Emma P. Hirth, director.

An educational and research organization established in April, 1919, to serve as a definite connecting link between the education of women and their vocational activities and to bring about, wherever possible, a closer correlation of the two. It is the successor to the Department of Information of the Intercollegiate Bureau of Occupations in New York, whose information files it inherited when the

United States Employment Service first took over and then abandoned the Intercollegiate Bureau.

The bureau is making investigations of vocations and professions for women so as to secure for each field of work definite and authoritative information regarding (a) training necessary and desirable—schools and institutions where it may be taken, with specific facts about each; (b) personal qualifications required; (c) best methods of entering the field; (d) kinds of positions and duties involved; (e) conditions of work; (f) salary ranges; (g) ultimate opportunities to which definite beginning positions may lead.

The following studies in occupations have been published by the bureau:

No. 1. Vocations for business and professional women. 1919. 48 p. 20 c. Published in cooperation with the National Board of the Young Women's Christian Association.

No. 2. Women in statistical work. 1921.

No. 3. Women in the law: an analysis of training, practice, and salaried positions. 1920. 138 p.

No. 4. The woman chemist. 1921.

No. 5. Positions of responsibility in department stores and other retail selling organizations: a study of opportunities for women. 1921. 126 p.

In addition to furnishing vocational information to inquirers and cooperating with college appointment bureaus, it has acted as editor and publisher of the Bulletin of the National Committee of Bureaus of Occupations.

BUSINESS STANDARDS ASSOCIATION.

189 West Madison Street, Chicago, Ill. 299 Broadway, New York, N. Y. Sherwin Cody, managing director.

Founded and incorporated under the laws of Illinois in 1913 as the National Associated Schools of Scientific Business. Its object is the improvement of commercial education and especially the relation between employers of office help and the schools which train applicants.

The special work of this organization has been the development of the national business ability tests, a full account of which is given in:

Cody, Sherwin. Commercial tests and how to use them. Yonkers, N. Y., World Book Co., 1919. vii, 216 p.

BUSINESS TRAINING CORPORATION.

185 Madison Avenue, New York, N. Y. 440 South Dearborn Street, Chicago, Ill.

This corporation conducts a course in modern production methods, planned by Mr. John Calder, in charge of industrial relations for Swift & Co., Chicago, for the training of foremen. An outline of the subject matter and method of procedure is given in a pamphlet entitled "A plan for group training for making better foremen, adopted by 300 leading concerns," which may be obtained on application.

CABOT FUND.

Philip Cabot, 111 Devonshire Street, Boston, Mass., trustee.

A trust fund of \$50,000 under the will of the late Charles M. Cabot of Boston, to be applied to such charitable uses as a board of three managers may determine. As illustrating the objects to which the fund may be devoted the testator suggested "the investigation and

study of industrial conditions in this country and the publication of the results of such investigation and study to the end that industrial abuses and hardships of industrial laborers may be known and remedied." The whole fund is to be expended and the trust terminated within 40 years after the death of the testator or within 20 years after the death of his last surviving child, whichever date shall fall first. Paul U. Kellogg, Edward T. Devine, and Philip Cabot are designated as the first members of the board of managers.

Appropriations were made in 1920 for an investigation of industrial espionage under the Department of Social Ethics of Harvard University, which was made by Sidney Howard and Robert Dunn, and the results published in *The New Republic*, February 16–March 30, 1921, in seven articles on "The labor spy" (also reprinted as a booklet); investigations of the present condition of the steel and iron industry with reference to the 8-hour day in Great Britain by Whiting Williams and the 12-hour day and the 7-day week in the United States, by John A. Fitch, the reports of which were published in a special number of *The Survey*, March 5, 1921, "Three shifts in steel: the long day and the way out"; the preparation of a report on the experience of 20 plants in the United States which have introduced the three-shift system, by Horace B. Drury, presented at a joint meeting of the Taylor Society, the Metropolitan and Management Sections of the American Society of Mechanical Engineers, and the New York Section of the American Institute of Electrical Engineers, December 3, 1920, and published, with discussion thereon, in *Bulletin of the Taylor Society* (v. 6, No. 1, Feb., 1921).

CARNEGIE CORPORATION OF NEW YORK—Americanization Study.

522 Fifth Avenue, New York, N. Y. Allen T. Burns, director.

Early in 1918 the Carnegie Corporation of New York provided for a study of methods of Americanization and the survey was organized in 10 divisions, each in charge of a specialist in the field assigned to it. The results of the investigation are now in course of publication by Harper & Bros., New York, in a series of "Americanization studies" in 11 volumes, one from each division, with a summary by the director.

DIVISION OF INDUSTRIAL AND ECONOMIC AMALGAMATION.—W. M. Leiserson, chief. The work of this division included personnel studies of immigrant employees in industrial establishments. Two schedules were used by interviewers: (a) For securing data about individual immigrants such as their personal and occupational histories, earnings, training, conditions of employment, knowledge of English, membership in labor unions and benefit societies, experience in strikes and with employment agencies, attitude toward employers, etc.; (b) applicable to industrial concerns, for obtaining information with regard to the methods and policies of employers in dealing with immigrants, and including inquiries as to labor turnover, hiring and firing, transfers, promotions and lay-offs, wages and earnings, system of wage payment, hours of labor, overtime, vacations, safety and compensation, health, hygiene and sanitation, training and education, and other industrial service work, with special reference to foreign-born workers in each case. The report of this division is announced for publication under the title, "Adjusting immigrant and industry."

DIVISION OF HEALTH STANDARDS AND CARE.—Michael M. Davis, jr., chief. A study of the special medical, sanitary, and health problems due to immigrant employees and the organization of industrial medical services has been made by this division by questionnaires to industrial physicians, nurses, and employment managers and by field investigations made in 1918 and 1919. The results are published in *Journal of Industrial Hygiene* (v. 2, No. 11, March, 1921, p. 397-422), in an article entitled "Industrial medicine and the immigrant," by M. M. Davis and Linda James, and form a chapter in the volume containing the report of this division's finding, issued 1921 under the title "Immigrant health and the community."

Other volumes of the series deal incidentally with problems of the immigrant in industry (e. g., immigrant classes in factories, in "School of the immigrant," by F. V. Thompson, p. 55, 99).

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING.
522 Fifth Avenue, New York, N. Y. Henry S. Pritchett, president.

In 1918 this foundation published as its Bulletin No. 11, "A study of engineering education," by Charles Riborg Mann. This publication contained the results of a comprehensive investigation undertaken at the request of and in close cooperation with the Joint Committee on Engineering Education of the National Engineering Societies, which consisted of delegates from the Society for the Promotion of Engineering Education, the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Chemical Engineers, and the American Institute of Mining Engineers. The report includes a description of present conditions, analysis of the problems of engineering education and suggested solutions. An appendix on objective tests describes investigations made by Prof. E. L. Thorndike, of Columbia University, as an integral part of the study. Their bearings on the problems of admission, elimination, and grading are discussed here and there throughout the report, but especially in Chapters VIII and XI.

CARNEGIE INSTITUTION OF WASHINGTON.

See Nutrition Laboratory, Boston (p. 141).

CHAMBER OF COMMERCE OF THE UNITED STATES OF AMERICA.
Mills Building, Washington, D. C. Elliot H. Goodwin, resident vice president.

This body is a national organization of chambers of commerce, trade, and civic associations. Its activities are threefold: (1) To serve American business in the study and solution of its national problems; (2) to interpret to the American business public those acts of the National Government which affect business; (3) to present to the various branches and departments of the National Government the opinion of American business on business and economic questions. In the formulation of this opinion on any subject it proceeds by the method of referendum, submitting to a vote of its constituent organizations a series of propositions, prepared by a committee of the chamber, which are printed on a ballot and accompanied by the report of the committee and arguments in the negative. Propositions approved by a two-thirds vote are adopted

by the chamber. Three such reports for referenda submitted by committees after investigations have dealt with personnel problems in industry and public employment:

Referendum No. 27 on the report of the Committee on Industrial Relations regarding principles of industrial relations. Apr. 16, 1919.

Referendum No. 31 on the report of the Committee on Industrial Relations regarding employment relations, June 9, 1920.

Referendum No. 35 on the report of the Committee on Budget and Efficiency regarding Government employees. Apr. 22, 1921.

The Raw Materials Production, Fabricated Production, and Railroad Departments are also concerned with the study of labor problems encountered by the employers' organizations in their respective fields.

CLEVELAND CHAMBER OF COMMERCE.

Cleveland, Ohio.

The Committee on Industrial Welfare, which issued reports on "Safety devices and factory organizations for the prevention of industrial accidents" (1913), "Industrial profit-sharing and welfare work" (1916), and "Substitution of woman for man power in industry" (1918), and the Committee on Labor Disputes, which issued three reports on "Violence in labor disputes" (1915, 1916, 1917), were succeeded in 1918 by the following:

COMMITTEE ON LABOR RELATIONS.—W. B. McAllister, chairman. In addition to a fourth report on "Violence in labor disputes" (1920) and two other pamphlets (1919), this committee prepared "Labor relations in Cleveland, a declaration of principles establishing a proper basis therefor," which was adopted by the Cleveland Chamber of Commerce, April, 1920. It has recently completed and published (1921) a report on "Employees' incentive plans in Cleveland industries" (95 p.), which includes detailed information regarding types of (a) individual incentive plans (wage-payment methods offering incentives to individual employees based on their accomplishment measured by predetermined standards of production), and (b) group incentive plans (employees' profit sharing, bonuses, and stock ownership), which were found in a survey of nearly 600 firms.

CLEVELAND HOSPITAL COUNCIL.

308 Anisfield Building, Cleveland, Ohio.

HOSPITAL AND HEALTH SURVEY OF CLEVELAND.—Haven Emerson, M. D., director. This survey, completed September, 1920, was conducted under the supervision of a committee appointed by the Hospital Council, October 1, 1919 (Malcolm L. McBride, chairman; Howell Wright, secretary). The expenses were met by appropriations received from the community chest, through the Welfare Federation, of which the Hospital Council is a member.

The complete report is in 11 parts, sold by the council at 50 cents per part. The results of the industrial investigations are contained in part 8 (p. 517-639), viz: Industrial medical service, by Wade Wright, M. D., director of the industrial hygiene survey; Women and industry, by Marie Wright; Children and industry, by Florence V. Ball, for the Consumers' League of Ohio. The method of survey is described in part 11, which contains also a bibliography of industrial hygiene surveys (p. 1054-1056).

COLLEGE OF PHYSICIANS.

15 South Twenty-second Street, Philadelphia, Pa. William S. Higbee, M. D., 1703 South Broad Street, clerk.

SECTION ON INDUSTRIAL MEDICINE AND PUBLIC HEALTH.—This section of the College of Physicians was organized in 1917. Forty-six fellows of the college have signed the roll of the section; meetings are held in February, April, October, and December, on the third Friday. Its proceedings are published in the Transactions of the College of Physicians, beginning with third series, v. 39, p. 421-489, 1917. The scope and aims of the section are described in a paper by J. M. Anders in third series, v. 39, p. 461.

COMMISSION ON RESUSCITATION FROM ELECTRIC SHOCK.

See National Electric Light Association (p. 125).

CONFERENCE BOARD OF PHYSICIANS IN INDUSTRY.

10 East Thirty-ninth Street, New York, N. Y. Dr. F. L. Rector, secretary.

Organized in April, 1914, for cooperative effort in introducing into industrial establishments the most effective measures for the treatment of injuries or ailments of employees; for promoting sanitary conditions in workshops; and for prevention of industrial diseases. It also acts as adviser on medical problems in industry to the National Industrial Conference Board.

Membership is limited to 30, and is confined to the medical directors of industrial establishments who are on a full-time basis. It is financed by contributions from the firms represented by the members.

The board meets bimonthly, five times a year, the midsummer meeting being omitted. Questions of administration of industrial medical departments, the scope and value of medical records, methods of treating industrial accidents and illness occurring within the plant, and related subjects are discussed at these meetings. Suggested methods are tried out by different board members, under actual conditions, and their experiences discussed at subsequent meetings. Methods of first-aid treatment of industrial injuries, the contents of first-aid outfits, the minimum size and equipment of first-aid rooms, methods of physical examination and classification of physical findings, and medical terminology used in industrial work have been promulgated and standardized by this board. These standardized methods and classifications have been published in Research Report No. 34 of the National Industrial Conference Board, which contains also a list of members. During the past year the board made a study of physical examinations among industrial workers, the results being published in the Journal of the American Medical Association of December 18, 1920.

CONFERENCE BOARD ON SAFETY AND SANITATION.

10 East Thirty-ninth Street, New York, N. Y. Magnus W. Alexander, executive secretary.

Organized in March, 1914, with the National Founders Association, the National Association of Manufacturers, the National Metal Trades Association, and the National Electric Light Association as charter members. Its purpose is organized cooperation between employers for the prevention of work accidents and the promotion of

sanitary conditions in workshops. At present the Conference Board is composed of the first three of the above-named associations.

The board has developed a number of protective devices for use in industrial plants which it recommends to employers for adoption in their plants. Among these devices are safety goggles, arc welders' helmets, leggings, shoes, respirators, knuckle guards, ladder feet, chip guards, danger signs, first-aid jars, and stretchers. These devices have been made available for all employers, whether or not members of the cooperating associations. The board authorizes its trade-mark, N. A. S. O., which stands for National Affiliated Safety Organizations, to be imprinted on all literature and devices which it has approved.

In 1916 it issued a number of popular safety bulletins under the general title of "The spirit of caution." Other information about its activities is given in a pamphlet entitled, "Conference boards and their value in industrial cooperation," by Magnus W. Alexander (1915, p. 3-11).

CONSUMERS' LEAGUE OF CINCINNATI.

25 East Ninth Street, New York, N. Y. Miss Annette Mann, executive secretary.

In November, 1916, three investigators of the league were appointed an advisory board by the Ohio Industrial Commission and given the necessary credentials for making a systematic study of the working conditions of women in Cincinnati factories. The report of this investigation was published by the league in August, 1918, viz:

Women workers in factories: a study of working conditions in 275 industrial establishments in Cincinnati and adjoining towns. By Annette Mann. 1918. 45 p.

In 1920 a study of wages and cost of living was made, covering the incomes and expenditures of 216 working women in several cities, and printed (7 p.) for use in the recent minimum wage campaign. Minor studies are outlined briefly in the reports for 1917-18 and 1919-20.

CONSUMERS' LEAGUE OF CONNECTICUT.

36 Pearl Street, Hartford, Conn. Mary C. Welles, general secretary.

Recent investigations made by the league to furnish data for its legislative activities include a study of "Child laborers in the shade-grown tobacco industry in Connecticut," made in 1916 and published as Pamphlet No. 11; an investigation of 164 "Women night workers in Connecticut," made in four cities in 1918 (summary of results printed as Leaflet No. 20); and investigations of tenement-house workers on factory products in five cities (1918), toilet facilities for employees in stores (1918) and seats for sales girls (1919) in several cities, the results of which have not been published.

In 1919-20, in cooperation with the State Board of Education, a study was made of the earnings of children who go to work at 14 years of age as compared with those who leave school at 18 years, and of the turnover of child workers of 14 to 15 years. For 1921 a study of the health of children from 14 to 18 years of age employed in factories and stores is planned.

CONSUMERS' LEAGUE OF EASTERN PENNSYLVANIA.

814-815 Otis Building, Sixteenth and Sansom Streets, Philadelphia, Pa. Miss A. Estelle Lauder, executive secretary.

This organization has recently published a report of an investigation of "Colored women as industrial workers in Philadelphia" (49 p.), made in 1919-20. Its earlier work includes an investigation of retail selling carried on in 1913-14 with the cooperation of the Pennsylvania Department of Labor and Industry, which published the results in its monthly bulletin (v. 2, No. 1, January, 1915, p. 15-98) under the title "Condition of women in mercantile establishments in Philadelphia"; a study of home work in 1916-17 made by investigators of the league, students of Bryn Mawr College, and the Department of Labor and Industry, which is to appear shortly as a State publication entitled "Industrial home work in Pennsylvania." In 1918 it initiated, and assisted the National Consumers' League in carrying out, the shoddy study published as "Wage-earning women in war time: the textile industry" (Jour. Indust. Hyg., October, 1919).

Surveys were made by the league in 1913-14 to gather material for three vocational guides issued as Pamphlets Nos. 1-3, "Occupations for Philadelphia girls"—No. 1, Paper-box making (20 p.); No. 2, Telephone operating (40 p.); No. 3, Bookbinding (88 p.). It has recently done the research work on the industrial section of a revised pamphlet on "Vocational opportunities in Philadelphia and vicinity," which is about to go to press.

An unpublished study of girls in public messenger service, made by the league with the assistance of other interested organizations, was the basis of a ruling by the Industrial Board of the Department of Labor and Industry in 1919 prohibiting such employment of girls under 18 years of age. A recent study of the application of civil service to the labor departments of the several States, undertaken for a civil-service campaign in Pennsylvania, has been circulated in typewritten form. Data on the cost of living of working girls in the State and the wages paid to them are collected currently.

CONSUMERS' LEAGUE OF NEW JERSEY.

13 Central Avenue, Newark, N. J.

In December, 1920, this organization published a report on "Night-working mothers in textile mills, Passaic, N. J.," by Agnes de Lima, research secretary (20 p.), containing the results of a study made during the preceding spring and early summer.

CONSUMERS' LEAGUE OF NEW YORK.

289 Fourth Avenue, New York, N. Y. Miss Helen Bryan, executive secretary.

Formed by the consolidation of the Consumers' League of the City of New York and the Consumers' League of New York State, effected June 14, 1921.

In 1916 the New York City organization completed and published the results of an investigation of the working conditions of woman employees in New York restaurants, viz:

Behind the scenes in a restaurant, a study of 1,017 women restaurant employees. 1916. 47 p.

In 1916 the Division of Industrial Hygiene of the New York City Department of Health undertook an investigation of power laundries and laundry workers in the city. The Consumers' League of the City of New York cooperated in the study by furnishing additional investigators to portray the social background and relate the working life to home conditions. The results of this survey were published jointly by the league and the Department of Health under the title:

The cost of clean clothes in terms of health: a study of laundries and laundry workers in New York City. By Louis I. Harris and Nelle Swartz. 1918. 96 p.

During 1919 the league made a study of conditions of work in steam and hand laundries, and reported its findings to the State Industrial Commission.

Early in 1919 a joint committee, consisting of representatives of the Consumers' League of New York City, Women's Trade Union League, Y. W. C. A., New York Urban League, the Division of Industrial Studies of the Russell Sage Foundation, and the Committee on Colored Workers of the Manhattan Trade School, was formed to study the employment of colored women in the industries of New York City. The report of the investigation was issued under the following title:

A new day for the colored woman worker: a study of colored women in industry in New York City. 1919. 39 p.

A study of hours, wages, and conditions of work of telephone operators on private switchboards was made by the league in 1920 to supplement the investigation of the New York Telephone Co. made by the New York State Bureau of Women in Industry. A summary of the results is given in the Consumers' League Bulletin, July, 1920.

COORDINATING COMMITTEE ON EMPLOYMENT ACTIVITIES IN NEW YORK CITY.

W. E. Mosher, Bureau of Municipal Research, New York, chairman; G. E. Scott, Brooklyn Chamber of Commerce, Brooklyn, secretary.

Organized early in 1921 at a conference consisting of representatives of the vocational educational activities and the public employment and other noncommercial employment interests, together with those representing employers' and employees' organizations as follows:

Employers' associations:

- New York State Chamber of Commerce.
- Merchants Association.
- Brooklyn Chamber of Commerce.
- Queensboro Chamber of Commerce.
- Retail Dry Goods Association.
- Executives' Club.

Central Trades and Labor Council.

New York State Department of Labor:

- Public Employment Bureau.
- Bureau of Mediation and Arbitration.
- Bureau of Women in Industry.
- Bureau of Statistics.

United States Employment Service.

Noncommercial employment agencies:

- Knights of Columbus.
- Young Women's Christian Association.
- Young Men's Christian Association.
- Social Workers' Exchange.

Vocational and continuation school teachers.
 Vocational Guidance and Employment Service for Juniors.
 Bureau of Vocational Information.
 State Department of Education (Vocational Division).

The purpose of the committee is to coordinate activities of these various groups so as to secure better training, more discriminating placement, better organization of the employment market and of production processes as means of reducing unemployment, and to formulate and develop a community employment policy.

Three working committees have been appointed to deal with three of the most pressing problems:

1. Unemployment. Chairman, W. E. Mosher; subcommittees on (1) Unemployment and the schools; (2) Unemployment and relief; (3) Means of reducing present unemployment; (4) A constructive program for reducing unemployment as an industrial waste.

2. Vocational opportunities. Chairman, Charles M. Smith; subcommittees on (1) Opportunities for juveniles; (2) Opportunities in the skilled trades; (3) Opportunities for high-school students; (4) Opportunities in professional and technical callings.

3. Continuation schools. Chairman, A. E. Kidd, Executives' Club.

The committee is issuing a monthly bulletin (mimeographed) which is distributed by the Bureau of Women in Industry of the New York State Department of Labor and the New York City Board of Education. It is to include reports of progress from the above committees and also the material formerly published in the "News Sheet" of the Bureau of Women in Industry and the Vocational Guidance and Employment Service for Juniors.

COUNCIL OF MANAGEMENT EDUCATION.

Drexel Building, Philadelphia, Pa. Hollis Godfrey, chairman.

Organized as the outcome of a conference on cooperation between the colleges and industries held in connection with the annual meeting of the Technology Clubs Associated at Philadelphia, March 26-27, 1920, it serves as a clearing house which provides immediate contact between the supply of college-trained management men and the demands of industry for these men; "management" being defined "to include all mind workers in industry from president to foreman, whether concerned with the technical or the nontechnical branches of management."

The council is organized in two divisions: the Industrial Division, composed of representatives of different American industries, viz, textiles, rubber, cotton and silk finishing, paper, shoes and leather, machinery and metals, railroads, public utilities, oil and mining; the Industrial Collegiate Division, composed of men who are or have been administrative officers in American colleges and have had industrial as well as academic experience. These two cooperate with the Committee on Cooperation with Industries of the American Council of Education. (See p. 71.)

The work of the council is confined to the field of collegiate education for management and is not concerned with the solution of technical problems of industrial processes and supplies. It consists at present mainly in the preparation of "joint specifications," supported by an "inventory of joint resources," kept constantly up to date. The specification shows what the management man needs to fit him for industry and how much of this the facilities of the college

permit being given; and thus it provides a sound basis for effective education for industrial management. The purpose of the inventory is to promote the use by the industries and the colleges of each other's resources reciprocally and to improve their coordination.

DETROIT BOARD OF COMMERCE.

Detroit, Mich. Harry B. Warner, secretary.

The Detroit Board of Commerce proposes to revive, in the fall of 1921, the work of the Executives' Club, which disbanded when its staff went into war services in 1917.¹²

DOUBLE DUTY FINGER GUILD.

Crocker-Wheeler Co., Ampere, N. J. Ida Hirst-Gifford, superintendent.

This department for the blind was founded in 1917 in conjunction with the plant of the Crocker-Wheeler Co., by Dr. S. S. Wheeler, for the purpose of ascertaining by trial what operations in the manufacture of electrical apparatus and machinery could be done as efficiently by blind workers as by their sight competitors, and of providing employment for them accordingly. It undertakes to cooperate with institutions, commissions, associations, etc., for the blind by training blind men and women to become efficient operatives in the electrical business. An account of the work done is given in a pamphlet entitled "Information about profitable industrial occupations for the blind" (Finger Industry News, No. 3, June, 1919) published by the guild.

ELECTRICAL SAFETY CONFERENCE.

25 City Hall Place, New York, N. Y. Dana Pierce, secretary.

An association of representatives of national organizations interested in questions affecting accident hazards arising from the design, construction, installation and use of electrical appliances. The co-operating organizations are as follows: Associated Manufacturers of Electrical Supplies; Bureau of Standards; The Electric Power Club; National Workmen's Compensation Service Bureau; Underwriters' Laboratories.

The objects of the conference are to promote by cooperative effort the orderly, consistent and proper development of practice in electrical manufactures and installations with regard to accident hazards; to promote the development and adoption of safety standards for the construction and test of electrical appliances and for their application and installation; to promote and make uniform the application of electrical safety codes both in regard to general principles and in regard to particular classes of appliances and systems.

¹² At that time the Executives' Club was advising 40 manufacturing concerns in Detroit, and included in its various study groups about 500 functional executives. Personnel research was one of the seven divisions of its work and the staff included specialists in employment management, employees' welfare work, production methods, and time study. Its library of industrial relations literature at the Detroit Board of Commerce has been continued by the assignment of a librarian from Detroit Public Library.

Two papers by Boyd Fisher, its vice president, "How to reduce labor turnover" and "Determining cost of turnover of labor," were published in U. S. Bureau of Labor Statistics Bulletin No. 227 (p. 29-47, 60-66) and in Annals of the American Academy of Political and Social Science, May, 1917 (v. 71, p. 10-32, 44-50). The report of a committee of physicians and welfare workers to the welfare managers' group of the club entitled "Recommended standard practice on medical supervision in Detroit plants" appeared in the same issue of the Annals (p. 96-106). A study of 87 mutual benefit organizations, made by one of the staff, is out of print. In addition to the above, confidential reports on special phases of management, including personnel, were sent out in multigraphed form to members of the club.

A committee of the conference has prepared the following publication, which has been approved and accepted by its cooperating organizations:

Safety standard for industrial control equipment 1921. 22 p. (Intended to be used in conjunction with part 3 of the national electrical safety code, to which it is supplementary.)

An additional section of this standard containing detailed rules for special application to elevators, cranes, printing presses, etc., is in course of preparation.

The conference is also the sponsor under the American Engineering Standards Committee of a code on electric power control, but the results of this work are not yet published.

EMPLOYMENT MANAGERS' ASSOCIATION, BOSTON.

Room 327, 6 Beacon Street, Boston, Mass. Ralph G. Wells, secretary.

This association, the first of its kind in the country, was organized in the fall of 1912, informal meetings having been held for some time previously. It is affiliated with the Industrial Relations Association of America.

The object of the organization is to study and promote the various phases of industrial relations activities, and problems of relations with employees—their selection, training, and management. Sustaining memberships (annual dues, \$50) are held by firms, which are entitled to designate as many of their executives as they desire to participate in the association's activities. In addition there are a few associate members (annual dues, \$25), individuals connected with educational institutions.

Regular meetings are held once a month, except during July and August; special meetings as interest in some special subject warrants. In recent years groups interested in particular phases of industrial relations work (e. g., employment-office practice, training and education, mutual benefit associations, planning and research) have been formed and hold meetings more or less regularly for the more intensive discussion of special topics. Occasionally all-day conferences on special subjects have been held and analyses have been prepared in advance to focus discussion (e. g., on shop committee plans in operation, foremen's meetings).

A file of information regarding industrial relations activities, collected by questionnaires sent to its members, is maintained at the office of the association to enable it to answer as fully as possible inquiries from members. This includes data regarding wage systems and other financial inducements, employment, training and education, working conditions, health, special service, employees' activities, and personal aid.

A report from the Committee on Labor Turnover of the association in 1917 on "The tabulating of labor turnover" was published in United States Bureau of Labor Statistics Bulletin No. 227 (p. 50-55) and in Annals of the American Academy of Political and Social Science, May, 1917 (p. 33-43).

ENGINEERING FOUNDATION.

29 West Thirty-ninth Street, New York, N. Y. Alfred D. Flinn, secretary.

This foundation is based on a trust fund established in 1914 by United Engineering Society from a gift by Ambrose Swasey, of Cleveland, Ohio, and subsequently increased by Mr. Swasey and other donors (present amount, \$500,000). The income from this endowment is used "for the furtherance of research in science and in engineering, or for the advancement in any other manner of the profession of engineering and the good of mankind." It is administered by the Engineering Foundation Board composed of members from the American Society of Civil Engineers; American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, and American Institute of Electrical Engineers, and members at large. The board is a department of United Engineering Society and is the joint agency of the Founder Societies named for the stimulation, direction and support of research.

Besides researches relating to the physical aspects of engineering, it has supported a limited study in the mental hygiene of industry by Dr. E. E. Southard, terminated by his sudden death in February, 1920. Three papers by Dr. Southard resulting from this study have been issued by Engineering Foundation in its reprint series:

No. 1. The mental hygiene of industry: A movement that particularly concerns employment managers. (Repr. from *Industrial Management*, Feb., 1920.) 24 p.

No. 2. Trade-unionism and temperament; the psychiatric point of view in industry. (Repr. from *Industrial Management*, Apr., 1920.) 18 p.

No. 3. The modern specialist in unrest; a place for the psychiatrist in industry. (Repr. from *Industrial Management*, June, 1920.) 18 p.

(These articles were also published in *Mental Hygiene*, v. 4, p. 43-64, 281-300, 550-563.)

Miss Mary C. Jarrett, who collaborated with Dr. Southard, presented a report of progress on the work before the Mental Hygiene Division of the National Conference of Social Work, New Orleans, April 17, 1920, which appeared under the title "The mental hygiene of industry" in *Mental Hygiene* (v. 4, No. 4, October, 1920).

Engineering Foundation has also cooperated with National Research Council in a preliminary examination of the possibilities for scientific research relating to personnel in industry, resulting in the organization of the Personnel Research Federation (see p. 143), and is considering the need and means for a thorough survey of industrial education and training, particularly training of men for and in industries relating to the various branches of engineering.

FEDERATED AMERICAN ENGINEERING SOCIETIES.

719 Fifteenth Street, NW., Washington, D. C. L. W. Wallace, executive secretary.

Organized June, 1920, in Washington, D. C., at a conference of delegates representing 66 engineering societies, after two years' preliminary work by development committees and a joint conference committee of the Founder Societies (i. e., the mechanical, civil, electrical, and mining engineers). The object of the organization is:

To further the interests of the public through the use of technical knowledge and engineering experience, and to consider and act upon matters common to the engineering and allied technical professions.

Its membership consists of national, local, State and regional engineering, and allied technical organizations and affiliations. The management is vested in a body known as the American Engineering Council¹³ and its executive board. Each constituent society is entitled to one representative on the American Engineering Council for a membership of from 100 to 1,000 engineers, and one additional representative for every additional 1,000 members or major fraction thereof. Each national society represented on the council contributes annually \$1.50 per member and each local, State, or regional organization \$1 per member.

COMMITTEE ON ELIMINATION OF WASTE IN INDUSTRY.—L. W. Wallace, vice chairman. This committee, appointed January 12, 1921, has undertaken an "Assay of waste" to ascertain primarily the waste of human effort in production, and to suggest means of removing the cause of such waste. Field studies have been carried on in nine different industries, viz: Housing and building trades, transportation, bituminous coal mining, ready-made men's clothing, printing, shoes, rubber, metal trades, and textiles, covering about 200 factories; and at Worcester, Mass., a regional assay covering 40 industries was made. A schedule of "Guide questions for field workers," prepared by J. H. Williams and C. E. Knoeppel, was issued in mimeographed form March, 1921, to standardize the collection of data. Section K (organization) of this questionnaire deals in part with the following topics: Personnel records, procedure of employment, unemployment and efforts to overcome seasonal fluctuation, records of discharges and lay-offs, practice of temporary shut downs, investigation of quits, labor turnover, determination of wage scale, hours of labor, methods of shop representation, labor difficulties due to strikes, lockouts, and stoppages, accidents, safety, and welfare work. A summary of the committee's findings was issued in August and the completed report on the results of this investigation was published in October, 1921 (McGraw-Hill Co.) under the title "Waste in industry" (402 p.).

GRINDING WHEEL MANUFACTURERS' ASSOCIATION OF THE UNITED STATES AND CANADA.

Dayton, Ohio. Frank R. Henry, secretary.

This association (formerly Abrasive Wheel Manufacturers) is joint sponsor for the fourth and revised edition of the "Safety code for the use, care, and protection of abrasive wheels" now being prepared under the auspices and rules of procedure of the American Engineering Standards Committee. The first three editions of this code were issued by the association independently. The original issue was based on the report of a special committee appointed by the National Machine Tool Builders Association to consider safety in connection with abrasive wheels and grinding machines and a tentative

¹³ Engineering Council, which this new body supersedes, went out of existence Dec. 31, 1920. It was established in the spring of 1917 for a similar purpose as a department of United Engineering Society and consisted of five representatives each from the four Founder Societies, four trustees of United Engineering Society, and one representative each from American Society for Testing Materials and American Railway Engineering Association, which became members February, 1919, and April, 1920, respectively. During the war period it was actively engaged in organizing engineering ability for the prosecution of the war. Its Committee on Classification and Compensation of Engineers, organized April, 1919, conducted an investigation concerning engineers in Federal, State, and municipal services and prepared a standard classification (for purposes of compensation) and a proposed schedule of salaries for engineers in Government employment (published January, 1920, in abbreviated form by the Founder Societies and the technical journals, e. g., Engineering News Record).

report of a special committee appointed by the State of Pennsylvania to draft laws pertaining to grinding and polishing. The third edition bears the approval of the Safety Committee of the National Machine Tool Builders' Association, which cooperated with the Safety Committee of this association in conducting the tests and compiling the tables.

HOUGHTON RESEARCH STAFF.

Third, American, and Somerset Streets, Philadelphia, Pa. E. F. Houghton & Co.

With the aid of outside specialists in bacteriology and dermatology this staff has recently completed an investigation of the "Causes of skin sores and boils among metal workers" and the results were published in 1920 in a pamphlet (51 p.), obtainable from the above firm.

ILLUMINATING ENGINEERING SOCIETY.

29 West Thirty-ninth Street, New York, N. Y.

Organized January 10, 1906, for the advancement and dissemination of theoretical and practical knowledge of the science and art of illumination. Sections have been organized in Chicago, New England, New York, Philadelphia; chapters for Cleveland and San Francisco Bay cities.

The Transactions, published monthly, include papers on eye fatigue, illumination and eye strain, factory lighting, glare, safety features of industrial lighting, etc. The 1915 volume contains a number of reports by a committee on the glare from reflecting surfaces, which began its work in 1912.

COMMITTEE ON LIGHTING LEGISLATION.—This standing committee was first appointed in 1913. In cooperation with a special committee on factory lighting it prepared in 1915 the code of lighting factories, mills, and other work places, printed with explanatory rules and notes in the society's Transactions (v. 10, p. 606-641). This code was essentially a safety code in that it stipulated the minimum requirements for proper illumination of dangerous places about machinery, etc. It also contained data and recommendations for installations designed to avoid glare and undue strain upon the eyes. It was amended in 1917 and has served as the basis for the industrial lighting laws, rules and regulations now in force in Pennsylvania, New Jersey, New York, Wisconsin, Oregon, California, and Ohio.

The code is now being revised under the auspices and rules of procedure of the American Engineering Standards Committee, the sponsorship for the industrial lighting code having been assigned to the Illuminating Engineering Society, which is represented by this committee. The revisions thus far proposed are in the nature of additions and modifications arising out of advances in the art and experience gained in the operation and enforcement of the State codes.

INDUSTRIAL INFORMATION SERVICE.

Barristers' Hall, Boston, Mass. W. L. Stoddard, secretary.

Organized in 1920 as "a clearing house for accurate current information about labor in industrial and mercantile establishments, transportation, agriculture, and clerical and professional service."

Since March 18, 1920, it has issued to clients (subscribing \$25 a year) loose-leaf weekly reports, entitled "The industrial information service," which consist largely of analyses and digests of published

data, but also contain short studies relating to personnel matters made by the staff or by the Bureau of Personnel Administration (see p. 89), whose director heads the New York office of the service (17 West Forty-seventh Street). A supplementary service letter is also sent to clients subscribing \$100.

Extended investigations are made for clients, subject to appropriate charges. In the early part of 1921 several studies on employment, unemployment, strikes and lockouts, employee representation, and methods of wage payment were made for the Committee on Elimination of Waste of the Federated American Engineering Societies. (See p. 103.)

INDUSTRIAL RELATIONS ASSOCIATION OF AMERICA.

671 Broad Street, Newark, N. J. E. A. Shay, executive secretary.

Organized as the National Association of Employment Managers at a convention of employment and other executives held in Rochester, N. Y., May, 1918; three such conferences having been held prior to this, in Minneapolis (January, 1916), Boston (May, 1916), and Philadelphia (April, 1917).¹⁴ Incorporated under the laws of New Jersey in February, 1920; name changed to Industrial Relations Association of America, March 1, 1920.

The purpose of the organization is to study and promote the various phases of industrial relations activities and to encourage the organization of and give assistance to local organizations of similar nature through the maintenance of central administrative offices and by such other means as the board of directors may determine.

There are at present 34 group members (annual dues: ¹⁵ \$5 per member for groups having not more than 75 members, with a minimum of \$100 and a maximum of \$300; \$4 per member for groups having 76 or more members). These groups are the affiliated local organizations listed below, with a membership representing in the aggregate approximately 2,000 concerns. In addition, there are about 120 business members (concerns so located geographically that they can not join a local group; dues, \$25 a year) and about 120 associate members (interested persons not directly engaged in industrial relations work; dues, \$10 a year).

Annual conventions are held at time and place determined by the board of directors (first at Cleveland, Ohio, May 21-23, 1919; second at Chicago, Ill., May 19-21, 1920; third to be held at New York, Nov. 1-4, 1921). The attendance at the 1920 convention was about 2,500. In addition to the general sessions, there are round-table discussions of special topics and sectional meetings of those belonging to particular groups of industrial or commercial concerns. Sections have been organized as follows: Banks, Chemical industries, Department stores, Lumber, Metal trades, Packing industries, Public utilities, Railroads, Steel industries. At the 1920 convention subject meetings were held on Americanization, apprentice training, benefit, thrift and budget, cooperative stores, coordination with educational institutions, developing the industrial relations staff, developing understudies, development of plant spirit, employment office methods, group insurance, housing, industrial relations department costs, introducing

¹⁴ Proceedings of these four conferences were published as Bulletins 196, 202, 227, 247, of the U. S. Bureau of Labor Statistics.

¹⁵ A proposal to raise the dues to \$10 a year per member is under consideration.

the new worker, job specifications and job analysis, mental tests, periodic rating, personal aid to workers, plant papers, problems of industries employing under 500, radicalism, recreation, relations of employment office and foremen, restaurants, shop and works committees, shortage of labor, stock purchase, vacations, wage levels and women. The Proceedings of the 1919 and 1920 conventions have been published (two volumes, \$5 each).

In October and December, 1919, and February, 1920, three one-day conferences on special subjects were held, two in New York and one in Chicago. The minutes of the first two of these bimonthly conferences have been published under the titles "Training the supervisory force" and "Relationships and adjustments between employers and employed" respectively (\$2 per volume). District conferences were started early in 1921, the first being held at Springfield, Mass., on January 7.

Since January, 1919, the association has issued a monthly periodical, *Personnel*, devoted entirely to subjects in the various branches of industrial relations and containing news notes of the local associations, etc. It is sent to all members.

A number of special investigations have been made by questionnaires sent out by the association to its members. A digest of the material received has been furnished to members either in pamphlet form, or in the columns of *Personnel*. The subjects covered (and the issues of *Personnel* containing brief summaries of the results) are as follows: National employment service (questionnaire with v. 1, No. 3, March, 1919; results in v. 1, No. 8, August, 1919); Americanization—effects of illiteracy and inability to understand English on turnover, earnings, industrial unrest, production, and accidents (questionnaire with v. 1, No. 7, July, 1919; results in v. 1, No. 10, October, 1919); Training the supervisory force (v. 2, No. 1, January, 1920); Extent and cost of personnel activities (v. 2, No. 3, March, 1920); Vacations (v. 2, No. 6, June, 1920); Supervisory force salaries; Introducing the new worker; How successful employment offices are started. A digest of information regarding personnel work in public utility corporations in the United States and Canada obtained by questionnaire sent out by the Public Utility Section is published in v. 2, No. 10, October, 1920.

The administrative office staff conducts an information service for members and reports that it has received and answered nearly 10,000 inquiries on subjects connected with industrial relations during the past two years.

Affiliated groups and their secretaries.

Employment Managers' Branch, Atlantic Coast Shipbuilders Association, Philadelphia, Pa.

Clarence Samuel King, Atlantic Coast Shipbuilders Association, 1701 Walnut Street.

Baltimore Council, Industrial Relations Association of America, Baltimore, Md.

J. Allison Muir, General Electric Co.

Employment Managers' Association, Boston, Mass. (see p. 101).

Ralph G. Wells, room 327, 6 Beacon Street.

Bridgeport Council, Industrial Relations Association of America, Bridgeport, Conn.

C. S. Smith, Manning, Maxwell & Moore (Inc.).

Buffalo Council, Industrial Relations Association of America, Buffalo, N. Y.

E. Earle Axtell, Masonic Service Bureau.

Stark County Employment Managers' School, Canton, Ohio.

J. Howard Renshaw, 17 Ervin Block.

Chicago Council, Industrial Relations Association of America, Chicago, Ill.

F. C. W. Parker, Central Y. M. C. A., 19 South LaSalle Street.

Cincinnati Council, Industrial Relations Association of America, Cincinnati, Ohio.

Mabel B. Wallace, George G. Strietmann's Sons Co.

Employment Managers Group, Manufacturers and Wholesale Merchants Board, Cleveland Chamber of Commerce.

S. R. Mason, Cleveland Chamber of Commerce.

Employment Managers' Association, Dayton, Ohio.

J. D. Douglas, Dayton Malleable Iron Co.

Detroit Employment Managers' Club, Detroit, Mich.

George W. Grant, Employers' Association, 1319 Book Building.

East Side Employment Managers' Association, East St. Louis, Ill.

Ross Bowles, East Side Employers' Association, Murphy Building.

Employment Managers' Club, Hamilton, Ohio.

Joseph M. Butcher, Y. M. C. A.

Indianapolis Council, Industrial Relations Association of America, Indianapolis, Ind.

Isabel N. Drummond, Indianapolis Glove Co.

Jersey City Council, Industrial Relations Association of America, Jersey City, N. J.

E. George Schaefer, Jersey City Chamber of Commerce.

Lansing Employment Managers' Association, Lansing, Mich.

Arthur N. Avery, New-Way Motor Co.

Employment Managers' Association, Los Angeles, Calif.

C. Benjamin Bemis, Southern California Telephone Co.

Employment Managers' Association, Meriden, Conn.

G. F. Croasdale, Connecticut Telephone & Electric Co.

Employment Managers' Section, Manufacturing Club of Minneapolis, Minneapolis, Minn.

Alexis Caswell, Manufacturers' Club.

Employment Managers' Club, Tri-City Manufacturers' Association, Moline, Ill.

Edgar R. Bladel, Tri-City Manufacturers' Association.

Newark Council, Industrial Relations Association of America, Newark, N. J.

M. A. Clark, E. I. du Pont de Nemours & Co. (Inc.), Arlington, N. J.

The Executives' Club of New York, New York City.

Oscar M. Miller, Standard Oil Co., 26 Broadway.

Employment Managers' Group, Chamber of Commerce, Niagara Falls, N. Y.

R. D. House, Niagara Falls Chamber of Commerce.

Philadelphia Association for the Discussion of Employment Problems, Philadelphia, Pa.

Joseph H. Willits, Wharton School, University of Pennsylvania.

Employment Managers' Association of the Employers' Association of Pittsburgh, Pittsburgh, Pa.

E. B. Moreland, Employers' Association.

Employment Managers' Club, Pontiac, Mich.

K. McVittie, Standard Parts Co.

Oregon Council, Industrial Relations Association of America, Portland, Oreg.

Raymond Van Valin, Y. M. C. A.

Industrial Relations Association of Berks County, Reading, Pa.

P. B. Weidner, Manufacturers' Association.

Employment and Service Group, Industrial Management Council, Rochester Chamber of Commerce.

Elliott Frost, Rochester Chamber of Commerce.

Industrial Relations Association of California, San Francisco, Calif.

Address: 451 Flood Building. Since August, 1921, this association has published a mimeographed monthly, Industrial Relations Exchange (Vining T. Fisher, editor).

St. Louis District Council, Industrial Relations Association of America, St. Louis, Mo.

C. H. Weiser, Southwestern Bell Telephone System.

Employment Managers' Council, St. Paul Association, St. Paul, Minn.

Theodore Sander, jr., Athletic Club Building.

Seattle Council, Industrial Relations Association of America, Seattle, Wash.

Nina F. Winn, Bemis Bros. Bag Co.

- Employment Managers' Association of St. Joseph County, South Bend, Ind.
 A. M. Taylor, Indiana Bell Telephone Co.
 Employment Managers' Association, Springfield, Mass.
 Charles V. Derrick, American Bosch Magneto Co.
 Industrial Relations Association of Toledo, Toledo, Ohio.
 Allan M. Kureth, 501 Nasby Building.

Unaffiliated groups and their secretaries.

- Employment Managers' Association, Auburn, N. Y.
 C. W. Storke, Employers' Association.
 Personnel Managers' Club, Brooklyn Chamber of Commerce, Brooklyn, N. Y.
 G. E. Scott, Brooklyn Chamber of Commerce, 32 Court Street.
 Industrial Relations Association of Elmira District, Elmira, N. Y.
 Jesse C. Shepard, Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
 Employment Managers' Association, Erie, Pa.
 J. C. Dalzell, Y. M. C. A.
 Employment Executives' Club, Hartford, Conn.
 Philip J. Sheriden, Pratt & Cady Co. (Inc.).
 Employment Managers' Council, Chamber of Commerce, Kansas City, Mo.
 Miss M. E. Brian, Western Union Telegraph Co.
 Lawrence Industrial Relations Club, Lawrence, Mass.
 G. W. Folk, Y. M. C. A.
 Employment Manager Group, New Hampshire Manufacturers' Association, Manchester, N. H.
 James Haithwaite, Stark Mills.
 Milwaukee Employment Managers' Association, Milwaukee, Wis.
 L. J. Parrish, Wisconsin Motor Manufacturing Co.
 Muskegon Employment Managers' Association, Muskegon, Mich.
 W. W. Poole, Union National Bank Building.
 Industrial Relations Council, New Haven, Conn.
 Richard M. Thompson, United States Rubber Co.
 Employment Executives' Club of Louisiana, New Orleans, La.
 A. S. Boisfontaine, Southern Pine Association.
 Personnel Workers' Association, New York City.
 Miss Christine M. Ayars, McElwain, Morse & Rogers, Duane Street.
 Blackstone Valley Employment Managers' Association, Pawtucket, R. I.
 E. E. Wynn, D. Goff & Sons.
 Employment Managers' Club, Peoria, Ill.
 H. S. Taes, Peoria, Ill.
 Employment Managers' Association of Berkshire County, Pittsfield, Mass.
 Myles W. Illingsworth, 73 North Street.
 Rhode Island Industrial Relations Association, Providence, R. I.
 George S. Wallace, Universal Winding Co.
 Personnel Managers' Club, Chamber of Commerce, Borough of Queens, N. Y.
 Frank E. Breyfogle, Chamber of Commerce, Bridge Plaza, Borough of Queens, N. Y.
 Employment Managers' Club, Saginaw, Mich.
 E. F. Vogt, Saginaw Products Co.
 Employment Executives' Club of the St. Louis District, St. Louis, Mo.
 O. V. Sly, Employers' Association, 302 Security Building.
 Executives' Club, Springfield Branch, National Metal Trades Association, Springfield, Mass.
 A. R. Tulloch, National Metal Trades Association, Springfield, Mass.
 Employment Managers' Association, Syracuse, N. Y.
 C. L. Nicholson, Pass & Seymour (Inc.).
 Industrial Relations Association of Toronto, Toronto, Ontario, Canada.
 G. W. Allen, Consumers' Gas Co.
 Industrial Relations Association of West Virginia, Wheeling, W. Va.
 Jos. A. Meagher, Employers' Association, 300 Schenk Building.

INSTITUTE FOR CRIPPLED AND DISABLED MEN.

101 East Twenty-third Street, New York, N. Y. J. C. Faries, director.

Established by the American Red Cross in 1917 as the Red Cross Institute for Crippled and Disabled Men; in November, 1919, turned

over to a board of trustees to be continued as a private philanthropic institution and name changed to present form; incorporated January 13, 1920.

Its purpose is, primarily, to help men who, through the loss of one or more limbs or the impairment of their use, find difficulty in earning their living. It does not undertake medical or surgical treatment.

As means appropriate to its aim it maintains a shop for the manufacture of artificial limbs and appliances, a training school for giving instruction in a variety of trades, and an employment bureau for finding suitable occupations for handicapped men. A report of the activities of the institute, by the director, entitled "Three years of work for handicapped men" (96 p.) published July, 1920, covers these three branches of its work and also contains a list of its publications.

The results of research undertaken by the institute have been published in 25 monographs, forming Publications, Series I, Nos. 1-16; Series II, Nos. 1-9. Of these, 12 are descriptive of the work done in foreign countries for the rehabilitation of disabled soldiers; the rest are mainly studies of the vocational possibilities for the handicapped in this country.

Preliminary to starting the work of the institute, an investigation was made in the summer of 1917 into the experiences of cripples in civil life in readjusting themselves to industry after injury. The results are given in:

Series I, No. 2. The economic consequences of physical disability: a case study of civilian cripples in New York City. By J. C. Faries. 1918. 11 p.

In the early part of 1918 the Department of Industrial Survey of the institute undertook a survey of the chief industries of New York City to locate the jobs in which the work could be performed by cripples. The first report was issued as:

Series I, No. 16. Opportunities for the employment of disabled men; preliminary survey of the piano, leather, rubber, paper goods, shoe, sheet-metal goods, candy, drug and chemical, cigar, silk, celluloid, optical goods, and motion-picture industries. 1918. 33 p.

A study supplementary to this was prepared for publication in the *American Journal of Care for Cripples*, but owing to the suspension of that magazine was never printed. A set of page proofs is on file in the institute library, which also has typewritten manuscripts of studies of the toy industry, woodworking, knit goods, machine trades, fur industry, photo-engraving, and banjo and drum trades, not included in the two foregoing compilations.

In Series II the institute has published five studies made by the Bureau of Vocational Guidance, Harvard University, viz:

No. 4. Employment opportunities for handicapped men in the coppersmithing trade. By Bert J. Morris. 1918.

No. 6. Employment opportunities for handicapped men in the optical-goods industry. By Bert J. Morris. 1919.

No. 7. Opportunities for handicapped men in the brush industry. By Charles H. Paull. 1919.

No. 8. Opportunities for handicapped men in the shoe industry. By Frederick J. Allen. 1919.

No. 9. Opportunities for handicapped men in the rubber industry. By B. J. Morris and C. H. Paull. 1919.

Placement technique in the employment work of the institute is the subject of Series I, No. 9, by Miss Gertrude Stein; and the results

of experimental work on prosthetic appliances are given in Series II, No. 2, entitled, "Principles of design and construction of artificial legs," by Philip Wilson.

The institute has also issued miscellaneous special publications and reprints and translations of addresses of delegates at the International Conference on Rehabilitation of the Disabled, held March, 1919, in New York City.

INSTITUTE FOR GOVERNMENT RESEARCH.

818 Connecticut Avenue, NW., Washington, D. C. W. F. Willoughby, director.

The purpose of this institute, incorporated under the laws of the District of Columbia March 16, 1916, is to conduct scientific investigations into the theory and practice of governmental administration, including the conditions affecting the efficiency and welfare of governmental officers and employees, and perform such services as may tend to the development and application of the principles of efficiency in governmental administration.

It is publishing the results of its researches in two series of volumes under the general titles "Principles of administration" and "Studies in administration," respectively. The former series attempts to determine and make known the most approved principles of administration; the latter consists of detailed and critical studies of existing systems in the United States or foreign countries. Personnel administration is the subject of two contributions, one in each series, which have been completed and are now in press:

Principles of public personnel administration. By Arthur W. Procter.

The Federal service: A study of the system of personnel administration of the United States Government. By Lewis Mayers.

The following studies of special personnel problems have already been published for the institute by D. Appleton & Co., New York:

Principles governing the retirement of public employees. By Lewis Merriam. 1918. 462 p.

Teachers' pension systems in the United States. By Paul Studensky. 1920. 460 p.

Information about the work of the institute in other lines of governmental research is given in a pamphlet entitled "The Institute for Government Research; its organization, work and publications," issued June, 1920.

INSTITUTE OF MAKERS OF EXPLOSIVES.

103 Park Avenue, New York, N. Y. C. Stewart Comeaux, secretary.

A safety code for the manufacture and plant handling of explosives is in course of preparation by a special committee. The institute has been approved as sponsor for the explosives code in the program of the American Engineering Standards Committee. (See p. 72.)

Members make reports to the institute on explosions occurring in their plants and on any unusual occurrence or condition which might have resulted in an explosion or fire. The causes are investigated and recommendations made with a view to preventing similar occurrences. The Committee on Standardization (C. A. Patterson, E. I. du Pont de Nemours & Co., Wilmington, Del., chairman) is concerned with safety problems in the industry, other than those indicated above.

INTERNATIONAL ASSOCIATION OF GARMENT MANUFACTURERS. 320 Broadway, New York, N. Y.

An association of 450 firms in the United States and Canada engaged in the manufacture of men's or women's clothing by power machines.

BUREAU OF FACTORY PRACTICE AND INDUSTRIAL RELATIONS.—Arthur Schwab, director. Established in June, 1919, and maintained by a group of about 80 members, each contributing \$100 a year, for employing cooperatively the services of an industrial engineer (at present on part time) to conduct research and furnish information regarding manufacturing experience. Membership is not limited to the association.

To date, the bureau has made 177 special inquiries by questionnaire and has reported the results in mimeographed form to its members. These have mainly dealt with matters of factory practice, cost accounting, etc., but the list includes also the following personnel topics: No. 103, Foreladies; No. 128, Overtime; No. 135, Method of paying learners; No. 149, Vacations to factory workers; No. 152, Bonus systems for executives; No. 155, Wage reductions; No. 158, Employee representation plan; No. 166, Average daily output for cutters—men's shirts; No. 168, Average daily output for joiners—men's shirts; No. 177 (in preparation), Reduction in welfare and service work.

A more extensive study of "Learners in the garment trades," dealing with the methods of obtaining, instructing, and retaining learners in the garment trades, was printed as Special Report No. 1, November, 1919 (49 p.).

A series of charts designated as "Executive's control charts," with mimeographed text to accompany them, was issued June 1, 1921, as a basis of educational plans for foremen.

A standardized application blank devised by the bureau for use in the employment offices of garment factories was issued in blue-print form February, 1921.

INTERNATIONAL ASSOCIATION OF INDUSTRIAL ACCIDENT BOARDS AND COMMISSIONS.

Ethelbert Stewart, United States Commissioner of Labor Statistics, secretary-treasurer.

Organized as the National Association of Industrial Accident Boards and Commissions at the first national conference of industrial accident boards and commissions held at Lansing, Mich., in 1914; present name adopted in 1916.

This association holds meetings once a year (now usually in September), or oftener, for the purpose of bringing together the officials charged with the duty of administering the workmen's compensation laws of the United States and Canada to consider, and, so far as possible, to agree on standardizing (*a*) ways of cutting down accidents; (*b*) medical, surgical, and hospital treatment for injured workers; (*c*) means for the reeducation of injured workmen and their restoration to industry; (*d*) methods of computing industrial accident and sickness insurance costs; (*e*) practices in administering compensation laws; (*f*) extensions and improvements in workmen's compensation legislation; and (*g*) reports and tabulations of industrial accidents and illnesses.

Each State of the United States and each Province of Canada having a workmen's compensation law, United States Employees' Compensation Commission, United States Bureau of Labor Statistics and the Department of Labor of Canada, are entitled to active membership (annual dues, \$50, with certain exceptions). Organizations and individuals actively interested in any phase of workmen's compensation or social insurance may be admitted to associate membership (annual dues, \$10).

The proceedings of the 1914 conference at which the association was organized were printed in *National Compensation Journal* (v. 1, No. 5), May, 1914; those of a special meeting at Chicago, January, 1915, and the second annual conference at Seattle, October, 1915, were published by the association. Since then the United States Bureau of Labor Statistics has issued the proceedings of the annual meetings in its Bulletin series, viz: Third, Columbus, 1916, Bulletin No. 210; fourth, Boston, 1917, Bulletin No. 248; fifth, Madison, 1918, Bulletin No. 264; sixth, Toronto, 1919, Bulletin No. 273; seventh, San Francisco, Bulletin No. 281. Papers and discussions on all of the subjects indicated in the above statement of the association's purpose are contained in these publications.

The Proceedings of the conference on social insurance called by this association and held at Washington, D. C., December 5-9, 1916, were published as Bulletin No. 212 of the United States Bureau of Labor Statistics. In addition to papers and discussions on workmen's compensation and industrial insurance legislation this volume contains material on physical examination and medical supervision of employees, permanently disabled workers, employees' benefit associations, and pension funds.

The association is joint sponsor for the safety codes on grinding wheels, power transmission, and woodworking, in preparation under the auspices and rules of procedure of the American Engineering Standards Committee. (See p. 74.)

COMMITTEE ON STATISTICS AND COMPENSATION INSURANCE COST.—Appointed at the Chicago meeting of the association in January, 1915, this committee has presented reports annually since that time. Bulletin No. 276 of the United States Bureau of Labor Statistics, entitled "Standardization of industrial accident statistics" (103 p.), consists of a revision and consolidation of the reports of this committee, 1915-1919. The sixth report, devoted to methods of comparing compensation cost, is printed in the 1920 proceedings of the association.

MEDICAL COMMITTEE.—The first report of this committee, on eye injuries, was presented and discussed at the 1920 annual meeting and is published in its proceedings.

INTERNATIONAL ASSOCIATION OF PUBLIC EMPLOYMENT SERVICES.

R. A. Flinn, 112 West Fifty-sixth Street, New York, N. Y., secretary-treasurer.

Organized in Chicago in December, 1913, as the American Association of Public Employment Offices; present name adopted in 1920. The objects of the association are (a) to promote a system or systems of employment exchanges in the United States and Canada, (b) to advance the study of employment problems, and (c) to bring into

closer association and to coordinate the efforts of Government officials and others engaged or interested in questions relating to employment, unemployment, and the organization of the labor market. Persons connected with Federal, State, provincial, or municipal departments operating public employment offices are eligible to membership; others may become associate members.

Proceedings of the first to third, and fourth annual meetings (1913-1916) were issued by United States Bureau of Labor Statistics as its Bulletins Nos. 192 and 220. The report of the Committee on Standardization, presented and adopted at the fifth annual meeting, September, 1917, was published in *Monthly Labor Review*, United States Bureau of Labor Statistics (v. 5, p. 950-961), November, 1917, and a brief account of the seventh annual meeting appeared in the December, 1919, issue (v. 9, p. 1941-1943). In 1921 the Canadian Department of Labor published Proceedings of the eighth annual meeting, Ottawa, September, 1920 (230 p.), which contains papers presented at sessions on "Unemployment and organization of employment," "Employment and education," "The placement of the physically handicapped," and "Employment office administration and technique" (including job analysis and psychological tests).

Buffalo, N. Y., has been chosen as the place of the 1921 meeting.

INTERNATIONAL LADIES' GARMENT WORKERS' UNION.

31 Union Square, New York, N. Y.

DEPARTMENT OF RECORDS AND RESEARCH.—Alexander Trachtenberg, director. This department has made a study of cost of living in Cleveland in connection with an arbitration in the garment industry there and is at present collecting data concerning earnings of its members preparatory to a study of seasonal fluctuations of employment and annual earnings.

INTER-RACIAL COUNCIL.

233 Broadway, New York, N. Y. Miss Frances A. Kellor, vice chairman.

This organization, which now includes in its membership about 1,100 industrial, mercantile, and banking corporations, and committees representing 32 racial groups, was formed in March, 1919. Its aims and purposes are:

To promote Americanism; to improve the relationships among races in America; to stabilize industrial conditions; to develop policies, standards, and legislation upon immigration and emigration; to apply American business methods to the foreign language press by building an American advertising base under it and securing supplies and credit for it.

As part of its service to industrial members it makes analyses of racial relations in plants where foreign-born workers are employed, with special reference to their reactions to methods of personnel administration, welfare activities, and community conditions, and makes recommendations based thereon to the management.

IOWA STATE FEDERATION OF LABOR.

Cedar Rapids, Iowa, Fred A. Canfield, president.

In February, 1921, this organization conducted a survey of wages, cost of living, and costs of building in Cedar Rapids to secure data

for use in connection with cases then pending between the council and the Master Builders' Association in Cedar Rapids and other cities on the question of wage scales for 1921. The report, which includes a detailed family budget, has been published under the title "Economic survey as applying to the building trades industry in Cedar Rapids, Iowa" (26 p.).

JOINT BOARD OF SANITARY CONTROL IN THE CLOAK, SUIT AND SKIRT AND DRESS AND WAIST INDUSTRIES.

131 East Seventeenth Street, New York, N. Y. George M. Price, M. D., director.

Organized October 31, 1910, pursuant to the protocol entered into after the strike in the summer of that year between the Cloak, Suit and Skirt Manufacturers' Protective Association, and the Cloak, Suit and Skirt locals of the International Ladies' Garment Workers' Union to establish standards of sanitary conditions, to which the manufacturers and the unions shall be committed. In 1913 a protocol was also established in the dress and waist industry, which then joined in the work of the board, and has since been under its jurisdiction. The semiannual inspection in October-November, 1920, covered 3,866 factories with 63,162 workers. The board consists of three representatives of the public, two representatives of each of the two labor unions, viz: the joint board of the Cloak, Skirt and Reefer Makers' Unions, and the joint board of the Ladies' Waist and Dress-makers' Union, and two representatives from each of the employers' organizations. The budget in 1920 was \$33,000 contributed by the unions, employers' associations and independent manufacturers.

The first annual report includes the results of a special study of the ventilation of cloak and suit shops made for the State Department of Labor in 1911 by Dr. C. T. Graham Rogers, with the aid of an assistant appointed by the board. In 1914 the board cooperated with the United States Public Health Service in its investigations of the health of garment workers, hygienic conditions of illumination in the workshops, and the effect of gas-heated appliances upon the air of workshops, which were reported in Public Health Bulletin Nos. 71 and 81.

For the purpose of its educational work among both employers and employees a number of special bulletins have been prepared and published, among which are "Manufacturers' bulletin on fire protection" (1915, No. 2), "Fire hazards in factory buildings" (1915, No. 8), and "Light and illumination in garment shops" (1918, No. 2). A summary of the activities of the board in supervising fire drills, first-aid work, sanitation and general health education, and a list of its publications, together with an account of the Union Health Center which has taken over and carries on as a cooperative enterprise the health, medical and dental services initiated by the board, are given in "Ten years of industrial sanitary self control: tenth annual report of the Joint Board of Sanitary Control," 1921.

JUDGE BAKER FOUNDATION.

40 Court Street (Scollay Square), Boston, Mass. William Healy, M. D., Augusta F. Bronner, Ph. D., directors.

Established in 1917, this foundation exists primarily for the study of the problems of delinquency, and in that connection has to do with

better educational and vocational adjustments. Other more general problems are also studied in continuation of the work on psychological tests previously published by the directors.¹⁶ A paper on "Individual variations in mental equipment," by Augusta F. Bronner, published in *Mental Hygiene* (v. 4, No. 3, p. 521-536), July, 1920, is distributed as Reprint No. 90 of the National Committee on Mental Hygiene.

LABOR BUREAU (INC.).

Rooms 513, 514, 1 Union Square, New York, N. Y. George Soule, Evans Clark, David J. Saposs, and Alfred L. Bernheim, directors.

This bureau, established in 1920, furnishes professional services, solely to labor organizations, in statistics, economic and social research, drafting of legislation, preparation of arbitration cases, etc. In April, 1921, branch offices were opened at 14 West Washington Street, Chicago, and 1700 Arch Street, Philadelphia.

The first year's work of the bureau included five original investigations to determine what is a living wage. The basis of each of these surveys was the "Minimum health and decency quantity budget," prepared by the United States Bureau of Labor Statistics. They were made in New York (East Harlem), November, 1920 (results published in *Monthly Labor Review*, February, 1921, pp. 61-66) and March, 1921; Philadelphia, March 1921; New York (South Brooklyn), April, 1921; Chicago, April, 1921. During the year an extensive investigation was made of wages, cost of living, profits of the manufacturers, and general working conditions in the Philadelphia textile industry. Studies have also been made of wages of fancy leather goods workers, various groups of city employees in New York, workers in the New York book and job printing trade, painters, decorators, and paper hangers in New York and Philadelphia, and railroad unskilled labor in New York State; and two reports were prepared on wages paid to seamen, firemen, cooks, and waiters, and the cost of living in seacoast cities, one covering the Atlantic and Gulf coast, the other the Pacific coast. Other investigations carried out include continuity of employment in the printing trades, piece work and week work in the clothing industry, and the extent and character of joint control by capital and labor in the management of industry. The following publication contains the results of one of its studies for labor organizations in Philadelphia:

The painting and decorating industry of Philadelphia: a report on wages, cost of living, profits, and economic conditions, compiled in behalf of Philadelphia District Council, No. 21, Brotherhood of Painters, Decorators, and Paper Hangers of America. 1921. 32 p.

The bureau has undertaken the installation of systems of personnel records for various labor unions, in such form as to allow at any time for statistical reports on unemployment, part-time work, labor turnover, causes of lay-offs, etc.

¹⁶ Cf. *Tests for practical mental classification*, by W. Healy and Grace M. Fernald. 1911. 53 p. (Psychological Monograph No. 54.) *Psychology of special abilities and disabilities*, by Augusta F. Bronner. Boston, 1917. 269 p.

LIFE EXTENSION INSTITUTE.

25 West Forty-fifth Street, New York, N. Y. Harold A. Ley, president; Eugene Lyman Fisk, M. D., medical director.

Organized and incorporated in 1914 as a self-sustaining public service institution with a hygiene reference board of 100 advisers to control its educational and scientific policy (Prof. Irving Fisher, Yale University, chairman).

Its purpose is to conserve health and prolong life and to this end it has organized health services for individual subscribers, for groups of employees, and for institutions such as insurance companies which are interested in prolonging the lives of their members or policyholders. These services include a standard physical examination, laboratory tests, monthly journals and other educational health literature. It maintains a pathological laboratory at the head office in New York and has in its service over 7,000 examining physicians located in the principal cities and towns throughout the country. In its industrial service the institute examines 1,500 to 2,000 employees a month.

Analyses of the examinations of typical industrial and commercial groups have been made, disclosing the extent of prevalence of various physical impairments. These results are available in reprints of papers by the medical director.

Recently the institute has developed a plan for a special form of mutual benefit association combining the health services of the institute with group health and accident insurance and group life insurance by an insurance company and has organized such associations in a considerable number of industrial concerns. Pamphlets describing the details of the scheme may be obtained on application. An account was also published in the *Survey*, October 16, 1920 (p. 90-91.)

McLEAN HOSPITAL.

Waverley, Mass.

PSYCHOLOGICAL LABORATORY.—The results of the studies in vocational psychology made while Dr. Frederic Lyman Wells¹⁷ was psychologist in this institution (until January 1, 1921) are published in the following:

Wells, F. L. The analysis of a successful agent. (*Life Association News*, v. 11, No. 3.) An address on the scientific selection of life insurance salesmen at the first annual meeting of the Association of Life Agency Officers, Chicago, Oct. 16, 1916.

— Alternative methods for mental examiners. (*Jour. App. Psychol.*, June, 1917, v. 1, p. 134-143.)

— On the psychomotor mechanisms of typewriting. (*Amer. Jour. Psychol.*, Jan., 1916, v. 27, p. 47-70.)

Kelley, C. M., and Wells, F. L. Briefer studies from the psychological laboratory of McLean Hospital. (*Jour. App. Psychol.*, June, 1919, v. 3, p. 172-193.) Includes the "coach proof" test, a filing test, and a brief test for mental accuracy.

MASSACHUSETTS GENERAL HOSPITAL.

Boston, Mass.

INDUSTRIAL CLINIC.—Wade Wright, M. D., secretary, industrial hygiene. This clinic was opened in the out-patient department of

¹⁷ Now chief of the psychological laboratory of Boston Psychopathic Hospital. (See p. 51.)

the hospital in March, 1916. A report of its activities was published in the Monthly Review of the U. S. Bureau of Labor Statistics, December, 1917, in two articles, "The study of occupational diseases in hospitals," by David L. Edsall (p. 169-185) and "An industrial clinic," by Wade Wright (p. 185-193). During the war it was temporarily suspended.

The scope of the activities of the Industrial Clinic is now being extended and it is closely affiliated with the Division of Industrial Hygiene of Harvard Medical School. (See p. 180.) It is undertaking certain studies of industrial morbidity, based on the records of the out-patient department of the hospital and analyses of the sick absentee reports of a large public service corporation, of the effects of early employment upon the health of adolescents, and of specific industrial diseases, particularly lead poisoning.

MASSACHUSETTS SOCIETY FOR MENTAL HYGIENE.

1132 Kimball Building, 18 Tremont Street, Boston 9, Mass.

A. W. Stearns, M. D., medical director.

Organized and incorporated in 1913 for the prevention of mental disease and defect, this society has thus far confined itself to educational work through public lectures, the preparation and distribution of literature, and conferences. Among its publications are the following on personnel subjects:

No. 30. Some criteria for the evaluation of mental tests and test series. By Florence Mateer.

No. 38. Application of psychiatry to industrial hygiene. By Stanley Cobb. (Repr. from Jour. Indust. Hyg., v. 1, No. 7, p. 343-347, Nov., 1919.)

In the future the society's efforts will be more specialized and among the selected fields of activity under special committees is a section the scope of which is "the application of knowledge of personality and temperament, as well as the prevention of disease, in the industries." A conference on the subject of "The human element in industry" was held April 7, 1921.

MERCHANTS ASSOCIATION OF NEW YORK.

Woolworth Building, 233 Broadway, New York, N. Y. S. C. Meade, secretary.

INDUSTRIAL BUREAU.—In 1917 this bureau made an investigation into the extent to which women were being substituted for men, the types of work on which they were found satisfactory, and special problems connected with such employment. The results were published in a pamphlet entitled "Increased employment of women in industry: a report on the problems of substituting female workers for male to meet the present labor scarcity," November, 1917 (23 p.).

It has recently made a study of the turnover of factory labor in New York City, the results of which were published in the organ of the association, *Greater New York* for October 4, 1920 (also in Monthly Labor Review, U. S. Bureau of Labor Statistics, November, 1920, p. 158).

COMMITTEE ON INDUSTRIAL RELATIONS.—This committee has prepared two reports on "Industrial relations," which were adopted and approved by the board of directors and published in pamphlet form November 13, 1919, and March 9, 1921, respectively.

METROPOLITAN LIFE INSURANCE CO.

1 Madison Avenue, New York, N. Y.

This company has financed the Framingham Community Health and Tuberculosis Demonstration conducted by the National Tuberculosis Association (see p. 136).

PERSONNEL DIVISION.—The system and methods followed by this division are described in an article by Lawrence Washington in *Industrial Management*, July 1, 1921 (p. 27-32).

POLICYHOLDERS' SERVICE BUREAU.—Alexander Fleisher, assistant secretary. This bureau sends out to group policyholders a monthly "Industrial Service Bulletin: Digest of current literature on personnel problems" (mimeographed); semimonthly letters on special topics in this field; and occasional special short studies (e. g., on methods of wage payment, training of foremen, employees' thrift and savings plans, employees' incentive or bonus plans), and bibliographies.

STATISTICAL BUREAU.—Louis I. Dublin, statistician. The results of an analysis of the occupational mortality experience of the Metropolitan Life Insurance Co., 1911-1913, prepared by this bureau, were published in 1917 under the title, "Causes of death, by occupation," as Bulletin No. 207 of United States Bureau of Labor Statistics. Among other studies by this bureau available for distribution are the following pamphlets bearing on occupational hazards and morbidity:

The effect of life conservation on the mortality of the Metropolitan Life Insurance Co.: a summary of the experience, industrial department, 1914, for superintendents, medical examiners, and visiting nurses. By Louis I. Dublin, 1916. 11 p.

The health of food-handlers: a cooperative study by the Department of Health, the Metropolitan Life Insurance Co., and the American Museum of Safety. Report prepared by Louis I. Harris and Louis I. Dublin. 1917. 22 p. (Also issued in Monograph series, No. 17, of New York City Department of Health.)

Sickness among coal miners and their families. By Lee K. Frankel and Louis I. Dublin. 1917. 14 p.

Occupation hazards and diagnostic signs: a guide for medical examiners regarding impairments to be looked for in hazardous occupations. 1918. 15 p.

Occupational ratings [rate book, insert]. 27 p.

NATIONAL ASSOCIATION OF CORPORATION TRAINING.

130 East Fifteenth Street, New York, N. Y. F. C. Henderschott, managing director.

Organized at New York University, January 24, 1913, as the National Association of Corporation Schools; name changed to present form August, 1920, and association incorporated under the laws of Delaware.

The object of the association is to aid corporations in the education of their employees: (1) By providing a forum for the interchange of ideas; (2) by collecting, and making available, data as to the successful and unsuccessful plans of developing the efficiency of the individual employee.

There are three classes of members: Class A, commercial, industrial, transportation, or governmental organizations (admission fee, \$100; annual dues, \$100); class B, employees of class A members (annual dues, \$5); class C, interested persons not eligible for membership in A or B (annual dues, \$10). Five local chapters have been organized, viz, Chicago, southern New England, Pittsburgh, western

New York, New York City. The annual conventions (four days) are held in different cities, usually in June.

Committees of the association study and investigate various phases of training and other personnel developments. Their reports are printed in advance of the annual convention and are included with discussions thereon in the annual volume of proceedings. For the current year (1921) there are committees on the following subjects:

Application of psychological tests and rating scales in industry (1919).

Employment (1915).

Executive training (1918).

Foremen training.

Health education (1914).

Job analysis (1919).

Labor turnover.

Marketing (1914).

Office-work training (1914).

Profit-sharing and allied thrift plans.

Public education (1918).

Skilled and semiskilled labor (1918).

Technical training (1918).

Trade apprenticeship (1915).

Section I—Manufacturing (1913).

Section II—Steel and iron and plant maintenance.

Section III—Railroads.

Training for foreign commerce.

Unskilled labor and americanization (1919).

Visualized training.

A list of the chairmen and outline of the scope of work of these committees is printed in a special circular and at the back of each number of the association's Bulletin. The date given after the name of any of the above committees indicates the first volume of proceedings in which a report of that committee or its equivalent appears.

In addition to the above a Committee on Vocational Guidance made extensive reports in 1915 and 1916 which cover the whole field of personnel administration. Reports of committees on "Methods of instruction" and "Corporation continuation schools" are printed in the proceedings 1917-1919.

A special and confidential report service is available to class A members only. Two confidential reports and two special reports are issued annually.

Confidential reports.—No. 1, An initial survey of the problem of labor turnover. No. 2, The present status of business correspondence; development of the business letter. No. 3, A survey of some of the industrial-educational problems of reconstruction. No. 4, A preliminary survey of the problem of representation in management. No. 5, Bonus plans and other schemes for insuring satisfactory punctuality and attendance records. No. 6, Transfers and promotions.

No. 7 (in preparation), Industrial training costs. No. 8 (in preparation), Personnel organizations.

Special reports.—No. 1, Trade apprenticeship schools. No. 2, Office-work schools. No. 3, Educational methods. No. 4, Hygiene and sanitation for the worker. No. 5, Housing plans. No. 6, Group insurance.

No. 7 (in preparation), Employee stock ownership plans. No. 8 (in preparation), Industrial athletics.

NATIONAL ASSOCIATION OF DIRECTORS OF EDUCATIONAL RESEARCH.

E. J. Ashbaugh, University of Iowa, Iowa City, secretary.

The objects of this association are (1) the formation of independent departments of educational research in all systems of public instruction, and (2) the promotion of the practical use of educational measurements in all educational research having for its object the improvement of the efficiency of the educational administration, supervision, or teaching.

In 1918 a committee of this association prepared for the annual meeting in that year a report on "The measurement of educational products" (194 p.), which was published by the National Society for the Study of Education, as its Seventeenth Yearbook (pt. 2). This includes chapters on bureaus of research in city school systems, existing tests and standards, statistical methods, and a bibliography.

The official organ of the association is the *Journal of Educational Research* (published for the Bureau of Educational Research, University of Illinois, by the Public School Publishing Co., Bloomington, Ill.) in which it conducts a department recording research in progress.

NATIONAL CHILD LABOR COMMITTEE.

105 East Twenty-second Street, New York, N. Y. Owen R. Lovejoy, general secretary.

Organized April 15, 1904, and incorporated by act of Congress February 21, 1907, to safeguard American childhood as affected by industrial and agricultural conditions. The enactment and enforcement of progressive legislation and the development of enlightened public opinion are essential features of the committee's policy. Its legislative program is chiefly concerned with child labor laws, compulsory education laws, mothers' pension laws, and so-called children's codes.

The committee has a staff of trained investigators whose services are placed at the disposal of local agencies desirous of procuring data for revision and standardization of child welfare laws in their respective States. Child-welfare surveys have been completed and the results published for Oklahoma (1918), Alabama (1918), North Carolina (1918), Kentucky (1919), and Tennessee (1921), and one in West Virginia is in progress. Each of these reports contains a chapter on the operation of the State child-labor laws.

A study of health defects of working children in Newark, N. J., under the direction of the committee is in progress. A discussion of the health needs of working children by Dr. H. H. Mitchell, in charge of the investigation, entitled "At what age should children enter industry?" was published in the May, 1921, issue of *The American Child*.

The 300 pamphlets and the child-labor bulletin (v. 1-7, 1912-1919), continued since May, 1919, by the quarterly periodical *The American Child*, which the committee has published, contain occasional reports of investigations of the employment of children in various occupations.

NATIONAL CIVIC FEDERATION.

Thirty-third Floor, Metropolitan Tower, New York, N. Y.
Mrs. Gertrude Beeks Easley, secretary, executive council.

An organization of representatives of capital, labor, and the general public formed as an outgrowth of conventions held in Chicago and New York, 1900-1901. Its purpose is "to organize the best brains of the nation in an educational movement seeking the solution of some of the great problems related to social and industrial progress; to provide for study and discussion of questions of national import; to aid thus in the crystallization of the most enlightened public opinion; and when desirable, to promote legislation in accordance therewith."

The federation is organized in the following departments: Food and drugs, Immigration, Industrial accident prevention, Industrial economics, Industrial mediation, Industrial training, Pensions, Profit-sharing, Public health education, Regulation of industrial corporations, Regulation of public utilities, Social insurance, Study of revolutionary movements, Welfare, Workmen's compensation, Woman's department, Minimum wage commission, and Committee on national defense. Their activities are reported in the *National Civic Federation Review*, annual meeting addresses, and special publications. Only those related to the field of personnel research are noted here, as follows:

Industrial Economics Department has made a study of the division of people's income, and its conclusions will soon be made public.

Industrial Training Department is interesting employers in factory industrial training through establishment of vestibule schools. This is an enlargement of the work conducted by the federation's Welfare Department for the Committee on Labor of the Council of National Defense, during the war, when there was given a practical demonstration of the possibility of utilizing such schools, to place new employees through proper tests in jobs which they could successfully perform, to train new unskilled workers and improve the efficiency of the skilled, including foremen. Reports on this subject are published in the *National Civic Federation Review* for April 10, 1919, and May 10, 1920.

Pensions Department published in 1916 "The problem of pensions: Federal, State, municipal, and industrial" (15 p.), to which is appended a tabular summary of data on "Industrial pensions or retirement systems in operation throughout the United States."

Profit-sharing Department has issued two editions of a report on "Profit sharing by American employers; examples from England, types in France" (2d ed., 1920, 423 p.).

Welfare Department, organized to induce employers through educational means to improve voluntarily working and living conditions of employees, is collecting data on welfare work in stores, factories, mines, on railroads and in public institutions. The scope of the inquiry is shown in a printed "Outline for report on welfare work" under the following main headings: Type of work place, sanitation, recreation, education, housing, additions to wages, provident funds, supervision of welfare work. The *National Civic Federation Review* for July 15, 1913, was devoted to "Working conditions in New York stores; a report upon welfare activities in 22 retail concerns." A

housing committee is organized under this department to evolve ways and means to meet the national housing problem.

Social Insurance Department has been active in opposition to proposed compulsory health insurance legislation. It has issued two reports of the committee on foreign inquiry (1914 and 1920), pamphlets by its committee on constructive plan, and addresses at annual meetings. The 1917 annual meeting addresses on compulsory health insurance include data on existing voluntary agencies instituted by trade unions and industrial concerns.

Committee upon dangerous and unhealthy industries of the New York and New Jersey section (Women's Welfare Department) published in 1912 a report of an investigation on "Mercury poisoning in the industries of New York City and vicinity," by Mrs. Lindon W. Bates, its chairman.

NATIONAL COMMITTEE FOR MENTAL HYGIENE.

Penn Terminal Building, Seventh Avenue and Thirty-first Street, New York, N. Y. Thomas W. Salmon, M. D., medical director.

Founded in 1909 and incorporated under the laws of the State of New York in 1916 to work for the conservation of mental health; to help prevent nervous and mental disorders and mental defect; to help raise the standards of care and treatment for those suffering from any of these disorders or mental defect; to secure and disseminate reliable information on these subjects and also on mental factors involved in problems related to industry, education, delinquency, dependency, and the like; to aid ex-service men disabled in the war; to cooperate with Federal, State, and local agencies. Affiliated societies or committees for mental hygiene have been organized in 17 States and the District of Columbia. The necessary funds to support the work of the committee have been largely provided by the Rockefeller Foundation.

Since January, 1917, the committee has published a quarterly magazine entitled *Mental Hygiene*, in which "nontechnical articles on the practical management of mental problems in all relations of life" appear (subscription \$2 a year). A list of publications consisting of reprints from this magazine and other medical journals, special publications, and leaflets available for distribution may be obtained on application. Among these are included the following pamphlets dealing with the mental hygiene of industry:

Adler, Herman M. Unemployment and personality; a study of psychopathic cases. (Reprint 2 from *Mental Hygiene*, v. 1, p. 16-24, Jan., 1917.)

Bailey, Pearce. Efficiency and inefficiency—a problem in medicine. (Reprint 12 from *Mental Hygiene*, v. 1, p. 196-210, Apr., 1917.)

Jarrett, Mary C. The psychopathic employee: a problem of industry. (Reprint from *Medicine and Surgery*, v. 1, p. 727-741, Sept., 1917.)

Rossey, C. S. Feeble-mindedness and industrial relations. (Reprint 19 from *Mental Hygiene*, v. 2, p. 34-52, Jan., 1918.)

Southard, E. E. The movement for a mental hygiene of industry. (Reprint 74 from *Mental Hygiene*, v. 4, p. 43-64, Jan., 1920.)

Southard, E. E. Trade-unionism and temperament: notes upon the psychiatric point of view in industry. (Reprint from *Mental Hygiene*, v. 4, p. 231-300, Apr., 1920.)

Southard, E. E. The modern specialist in unrest: a place for the psychiatrist in industry. (Reprint 92 from *Mental Hygiene*, v. 4, p. 550-563, July, 1920.)

Jarrett, Mary C. The mental hygiene of industry: report of progress of work undertaken under the Engineering Foundation of New York. (Reprint 88 from *Mental Hygiene*, v. 4, No. 4, Oct., 1920.)

NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS.

130 East Twenty-second Street, New York, N. Y. Mrs. Winifred Hathaway, secretary.

Organized January 1, 1915, by the consolidation of the Committee for the Prevention of Blindness and the American Association for the Conservation of Vision.

In 1916 this committee made a survey of 70 representative industrial plants in Buffalo, N. Y., to ascertain the local working conditions and the industrial accident hazards which might be productive of eye injuries. With this study as a basis, the investigation was extended to cover the entire field of such hazards in American industries. The results were issued as No. 12 of the committee's publications:

Eye hazards in industrial occupations: a report of typical cases and conditions, with recommendations for safe practice. By Gordon L. Berry and Thomas P. Bradshaw. Nov., 1917. 145 p.

A model plan for saving sight in industry was prepared by the committee for the hospital and health survey made by the Cleveland Hospital Council in 1920. (See p. 94.)

The committee has cooperated with the United States Bureau of Standards in preparation of the "National safety code for the protection of the heads and eyes of industrial workers." It has also prepared a set of posters on industrial eye accidents for use in safety and health exhibits, factories, etc.; and miniature reproductions for general distribution (e. g., in pay envelopes). Recently its publicity material has included several articles on the dangers of wood alcohol.

NATIONAL COMMITTEE ON PRISONS AND PRISON LABOR.

Broadway and One hundred and sixteenth Street, New York, N. Y. E. Stagg Whitin, chairman, executive committee.

Established in August, 1909, for the purpose of studying the problem of labor in prison and with a view to causing the abolition of the contract system of convict labor, this committee has recently endeavored to secure the introduction of modern methods of personnel administration into prison industries. Its program for making the prisons training schools for life after release and for increasing production in the prison industries, so that penal communities may become self-sustaining, includes classification of prisoners by psychiatric examination to determine appropriate treatment, industrial training, placement by trade tests, payment of wages based on individual efficiency and other incentives, and a system of after care and industrial parole.

Investigations on these subjects were made by the New York (State) Prison Survey Committee, of which Mr. Adolph Lewisohn, president of the national committee, was chairman, and the results and recommendations thereon published in its report, 1920 (412 p.), particularly in Chapters III, IX, and XII. The national committee is at present engaged in a reorganization of the shoe shop at Sing Sing Prison according to the plan recommended to demonstrate its practical application. It has already secured the establishment of a psychiatric bureau in that institution.

In 1920 the committee published a report on "The penal system of the District of Columbia" (32 p., illus., charts), based on a study which it made at the invitation of the Penal Commission of the District of Columbia, submitting recommendations along the lines above indicated.

The committee is at present cooperating with State authorities in similar prison surveys in Virginia and Texas.

NATIONAL CONSUMERS' LEAGUE.

44 East Twenty-third Street, New York, N. Y. Mrs. Florence Kelley, general secretary; Miss Mary W. Dewson, research secretary.

Organized May, 1899, to awaken responsibility for conditions under which goods are made and distributed, through investigation, education, and legislation, to mobilize public opinion in behalf of enlightened standards for workers and honest products for all. The principal research work done by the league has been in the preparation of briefs in defense of the constitutionality of labor laws, limiting the hours of labor, prohibiting night work of women, and providing for the fixing of minimum wages. In addition to these it has published results of the following surveys made under its auspices:

Wage-earning women and girls in Baltimore—a study of the cost of living in 1918. By Josephine A. Roche. 1918. 36 p.

Survey of wage-earning girls below sixteen years of age in Wilkes-Barre, Pa. By Sarah H. Atherton. 1915. 65 p.

Wage-earning women in war time—the textile industry. (With special reference in Pennsylvania and New Jersey to woolen and worsted yarn, and in Rhode Island to work of women at night.) By Florence Kelley. (Repr. from Journal of Industrial Hygiene for October, 1919.) 24 p.

See also Consumers' Leagues of Cincinnati, Connecticut, Eastern Pennsylvania, New Jersey, New York (p. 96-97), Toledo (p. 158).

NATIONAL ELECTRIC LIGHT ASSOCIATION.

29 West Thirty-ninth Street, New York, N. Y. M. H. Aylesworth, executive manager.

This association was organized at Chicago in 1885 and its object is to advance the art and science of production, distribution and use of electricity for light, heat, and power for public service, in furtherance of which its activities are largely educational. The association has four national sections—Accounting, Commercial, Public relations, Technical—and 13 geographic divisions, under which are grouped State associations and sections; also company sections and local clubs. The functions and personnel of its numerous committees, subcommittees, etc., are given in a pamphlet, "Organization personnel of the National Electric Light Association," published annually. Their reports are printed as advance copies for presentation at the annual conventions of the association, held in May, and subsequently published in the volumes of proceedings. Among the subjects which have been studied through committees are accident prevention, resuscitation from electric shock, education of employees in the industry, and wage incentives.

ACCIDENT PREVENTION COMMITTEE.—Charles B. Scott, Bureau of Safety, Chicago, Ill., chairman. This committee has presented reports since 1914. It was at first concerned with preparation of accident-prevention rules relating to operating methods of companies

and workmen, later with the details of operating methods and safety specifications for tools and appliances, such as safety belts, rubber gloves, ladders, first-aid kits, etc. In 1920 its scope was extended to include also health promotion and morbidity statistics, and fire prevention and extinguishment; and its report presented in 1921 includes detail reports on these subjects in addition to material on operating methods, organization methods, and apparatus.

As recently reorganized this committee consists of geographic division representatives, who are the chairmen of the accident prevention committees of these divisions, and some members at large. Its work is now carried on in seven subcommittees—Apparatus, Devices and appliances, Fire prevention, Health promotion, Operating methods, Organization, Publicity.

During the period 1918-19 it was a subcommittee of the Safety Rules and Accident Prevention Committee of the association, and cooperated with the Bureau of Standards in formulating the operating rules in part 4 of the National Electrical Safety Code. The main committee (later a separate Safety Rules Committee) was chiefly concerned with assisting the Bureau of Standards and various State commissions in the preparation or revision of safety rules for construction of overhead and underground lines, electrical equipment of stations, and electrical equipment for utilization of electrical energy, covered by parts 1 to 3 of the National Electrical Safety Code, and subcommittees were formed to assist in special researches connected therewith.

COMMISSIONS ON RESUSCITATION FROM ELECTRIC SHOCK.—The first commission, consisting of representatives of the American Medical Association, National Electric Light Association and General Electric Co. was organized, on the initiative of this association, in 1911 to consider the problems presented in resuscitation and in the determination of the best manual method of artificial respiration that could instantly be applied by laymen. Its report unqualifiedly recommended the prone pressure method and rules based on the findings of the commission were printed and distributed by the National Electric Light Association in 1912.

The third resuscitation commission,¹⁸ composed of 15 physiologists, physicians, surgeons, and engineers, representing medical and technical societies, institutions of learning, bureaus, and divisions of the Federal Government and the electrical industry, was organized under the auspices of the Committee on Safety Rules and Accident Prevention of the N. E. L. A. in 1918 to review the work accomplished and make further recommendations. Besides considering all the known efficient methods of artificial respiration for emergency use, a number of laboratory tests and demonstrations were made by the commission relative to the value of mechanical devices for inducing respiration in the apparently dead. Its proceedings and resolutions are appended (p. 20-32) to the "Rules for resuscitation from electrical shock by the prone pressure method," revised April, 1919, by the subcommittee on accident prevention of the above-named committee, on the basis of the commission's resolutions, and issued by

¹⁸ The Second Resuscitation Commission was appointed by the U. S. Bureau of Mines to deal with cases of asphyxiation by mine gases and consisted of the five representatives of the American Medical Association on the First Commission. Its report was published by the bureau as its Technical Paper No. 77.

the association. The commission voted to continue its existence, ready to respond when required. (Dr. Reid Hunt, Harvard Medical School, secretary.)

EDUCATION COMMITTEE (COMMERCIAL NATIONAL SECTION).—Fred R. Jenkins, Commonwealth Edison Co., Chicago, Ill., chairman. A plan of educational work for the higher training and improved efficiency of the men engaged in the industry was inaugurated by the committee in November, 1915, with the first edition of the "Commercial engineering course" (17 lessons), followed in January, 1917, by the "Course in practical electricity" (10 lessons), both of which have been frequently revised and reprinted. They are conducted by correspondence. A list of the subjects covered by the lessons is given in the 1921 report of the committee.

ACCOUNTING EDUCATION COMMITTEE (ACCOUNTING NATIONAL SECTION).—Fred R. Jenkins, Commonwealth Edison Co., Chicago, Ill., chairman. This committee, appointed in 1916 to select, prepare, publish, and exploit among members suitable accounting courses for persons engaged in the industry, has since 1917 conducted two home-study accounting courses, viz, an elementary accounting course (in 7 lessons) and an advanced course in electric utility accounting, prepared by a number of specialists (to be completed in 36 lessons by October, 1921). A list of the subjects covered by the lessons is given in the committee's report for 1921.

BONUS SYSTEM COMMITTEE (ACCOUNTING NATIONAL SECTION).—A. H. S. Cantlin, Pennsylvania Power & Light Co., Allentown, Pa., chairman. Appointed in 1919 to investigate and report on bonus systems among central stations, this committee's work is limited to the departments, from meter reading to clerical work and collection of accounts, and does not include salesmen, power plants, linemen, etc. It has investigated the extent of actual use of such systems in the companies serving cities with populations of 50,000 or more or having 10,000 kilowatts or more of generating equipment installed, and has described and discussed the systems found in the reports which it presented in 1920 and 1921.

COMPENSATION OF SALESMEN COMMITTEE (COMMERCIAL NATIONAL SECTION).—L. R. Wallis, Edison Co. of Boston, chairman. Appointed to determine some points of relationship which compensation of salesmen should bear to the qualifications required in performing the various classes of work, to sales opportunities, and to net sales, the committee has secured data by questionnaires sent to all company members serving a population of 100,000 or more, and has analyzed the answers in its 1921 report.

NATIONAL FIRE PROTECTION ASSOCIATION.

87 Milk Street, Boston, Mass. Franklin H. Wentworth, secretary-treasurer.

Organized in 1895 to promote the science and improve the methods of fire protection and prevention, to obtain and circulate information on these subjects, and to secure the cooperation of its members in establishing proper safeguards against loss of life and property by fire. There are 135 members (annual dues, \$60) and about 4,500 associates (annual dues, \$10). The members are national institutes, societies, and associations (e. g., of engineers and manufacturers) having a direct interest in protection of life and property against

fire, State associations for reduction of fire waste, insurance boards and associations; associates are other organizations, corporations, and individuals. Chapters have been organized in Chicago, New York, Oregon, San Francisco, Seattle, Spokane, and Tacoma.

A three-day convention is held annually, at which reports on the various standards for protection against fire are presented by committees of experts and discussed by the convention before adoption. The following committees are specially concerned with investigations of industrial hazards: Safety to life, Manufacturing risks and special hazards, Gases, Hazardous chemicals and explosives, Inflammable liquids. Other committees are concerned with fire-prevention apparatus. The committee reports are published in the Proceedings of the annual meetings (for members only).

The Electrical Committee¹⁹ of the association is carrying on the work of revision of the National Electrical [Fire] Code (regulations for electric wiring and apparatus) originally drafted in 1897 by the National Conference on Standard Electrical Rules and adopted by the National Board of Fire Underwriters. The 1920 revision has been approved as "American standard" by the American Engineering Standards Committee, the association being sponsor for the electrical fire code in the safety-code program of that committee. It has also been selected as sponsor for the safety code on stairways to be prepared under the same auspices.

A list of the standard regulations for fire protection and the safeguarding of hazards, recommended by the association and adopted as the official standard of the National Board of Fire Underwriters, and other publications available for free distribution or for sale, is contained in a pamphlet entitled "The story of the National Fire Protection Association, and list of its publications," obtainable on application at the executive office.

NATIONAL FOUNDERS' ASSOCIATION.

29 South La Salle Street, Chicago, Ill. J. M. Taylor, secretary.

Organized in January, 1898, the original purpose of this association was to provide machinery for bargaining collectively with the Iron Molders' Union. A joint board of conciliation was established under the so-called New York agreement, which was in force until 1904, when it was abrogated. Since that time the association has operated independently of the union and has adopted the open-shop policy. In conjunction with the National Metal Trades Association it publishes *The Open-Shop Review* in advocacy of this policy. It is a member association of the National Industrial Conference Board.

COMMITTEE ON SAFETY AND SANITATION.—Appointed in 1912 under the chairmanship of Magnus W. Alexander, this committee investigated each specific hazard in the foundry industry and appropriate means for effective safeguard against it, and issued a bulletin on the subject. These were combined in 1915 to form a handbook entitled "Safety in the foundry," by M. W. Alexander (202 p.). It has

¹⁹ The following associations, formerly members of the National Conference, are represented on this committee: American Electric Railway Association, American Institute of Electrical Engineers, Associated Factory Mutual Fire Insurance Companies, National Association of Electrical Inspectors, National Board of Fire Underwriters, National Electric Light Association, National Electrical Contractors' Association.

developed a number of safety appliances, such as goggles, foundry shoes and leggings, ladder feet, respirators, etc. In 1914 this committee invited similar committees of other associations to meet with it and as a result of these meetings the Conference Board on Safety and Sanitation was formed. (See p. 95.)

In 1917 the National Founders' Association, in conjunction with the American Foundrymen's Association, established a foundry code on safety and sanitation and several States have since used it as the basis for framing their foundry safety rules and regulations. These two associations are joint sponsors for future revisions of the code under the auspices of the American Engineering Standards Committee.

NATIONAL INDUSTRIAL CONFERENCE BOARD.

10 East Thirty-ninth Street, New York, N. Y. Magnus W. Alexander, managing director. (Branch office, Southern Building, Washington, D. C.)

A cooperative body composed of representatives of national and State industrial associations, and of closely allied engineering societies of a national character, organized in May, 1916, to provide a clearing house of information, a forum for discussion, and machinery for cooperative action on matters that vitally affect the industrial development of the Nation. The stated objects of the board are:

(1) To make impartial investigations in the field of industrial economics, and to cooperate to this end with individuals, institutions, associations, and agencies of Government.

(2) To aid in securing, on the basis of established economic facts underlying and affecting industrial conditions, joint deliberation of manufacturers and associations of manufacturers in the United States.

(3) To secure, analyze, and disseminate information concerning industrial problems and experience in the United States and other countries.

(4) To promote good understanding and friendly relations between employees and employers for the benefit of both, and between those engaged in industry and the public for the general good of the community.

(5) To make the results of its research and collective experiences available to Governmental agencies when industrial and economic legislation and policies are being formulated, in an endeavor to secure sympathetic consideration of its views and opinions, and

(6) In general, to encourage and promote the sound development of American industry by all proper and legitimate means.

The affiliated organizations (1921) are:

American Cotton Manufacturers' Association.
 American Electric Railway Association.
 American Hardware Manufacturers' Association.
 American Malleable Castings Association.
 American Paper and Pulp Association.
 American Pig Iron Association.
 Electrical Manufacturers' Club.
 Institute of Makers of Explosives.
 Manufacturing Chemists' Association of the United States.
 National Association of Cotton Manufacturers.
 National Association of Finishers of Cotton Fabrics.
 National Association of Manufacturers.
 National Association of Wool Manufacturers.
 National Automobile Chamber of Commerce.
 National Boot and Shoe Manufacturers' Association.
 National Electric Light Association.
 National Erectors' Association.
 National Founders' Association.
 National Implement and Vehicle Association.

National Industrial Council.
 Railway Car Manufacturers' Association.
 Rubber Association of America (Inc.).
 Silk Association of America.
 Tobacco Merchants' Association of the United States.
 United Typothetæ of America.
 Associated Industries of Massachusetts.
 Associated Industries of New York State (Inc.).
 Illinois Manufacturers' Association.
 Manufacturers' Association of Connecticut (Inc.).

The Conference Board of Physicians in Industry (see p. 95) acts as advisor on medical problems in industry to the National Industrial Conference Board.

The publications of the board consist of Research Reports, Nos. 1-38; Special Reports, Nos. 1-18; and *Industrial News Survey*, issued weekly. These include:

A series of Research Reports on "Hours of work as related to output and health of workers" in various industries, viz: cotton manufacturing (No. 4), boot and shoe industry (No. 7), wool manufacturing (No. 12), silk manufacturing (No. 16), and metal manufacturing industries (No. 18); "The hours of work problem in five major industries" (No. 27); "Practical experience with the work week of 48 hours or less" (No. 32); also "Analysis of British war-time reports on hours of work as related to output and fatigue" (No. 2).

A series of Research Reports on "Changes in the cost of living" since July, 1914, now issued every four months, i. e., to March, July, and November (Nos. 9, 14, 17, 19, 25, 28, 30, 33, and 36).

A series of local studies of "The cost of living among wage-earners": Fall River, Mass., October, 1919 (Research Report No. 22); Lawrence, Mass., November, 1919 (Research Report No. 24); North Hudson County, N. J., January, 1920 (Special Report No. 7); Greenville and Pelzer, S. C., and Charlotte, N. C., January-February, 1920 (Special Report No. 8); Cincinnati, Ohio, May, 1920 (Special Report No. 13); Worcester, Mass., June, 1920 (Special Report No. 16).

Research reports on the following special subjects: "War-time employment of women in the metal trades" (No. 8); "Rest periods for industrial workers" (No. 13); "Works' councils in the United States" (No. 21), and supplement, "A works' council in the United States" (No. 26); "Practical experience with profit-sharing in industrial establishments" (No. 29); "Health service in industry" (No. 34); "Wage changes in industry, September, 1914, to December, 1920" (No. 35); "Cost of health service in industry" (No. 37); "Experience with trade-union agreements, clothing industries" (No. 38).

A complete list, with prices, is printed at the end of the latest research report.

The activities of the Conference Board on Training of Apprentices²⁰ were merged with those of the National Industrial Conference Board in 1920.

²⁰ Organized March, 1915 (Magnus W. Alexander, secretary); composed of representatives of National Association of Manufacturers, National Founders' Association, National Metal Trades Association, National Machine Tool Builders' Association, United Typothetæ and Franklin Clubs of America, American Foundrymen's Association. Publications: Practical apprenticeship, a bulletin of information on the training of industrial workers; Bulletin No. 1, Necessity of apprenticeship (1916, 18 p.); Bulletin No. 2, Fundamentals of apprenticeship (1917, 30 p.). (Prepared by Henry P. Porter.)

NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION.

818 Provident Bank Building, Cincinnati, Ohio. Ernest F. DuBrul, general manager.

This association is joint sponsor for the safety code on power drive of machine tools which is being prepared under the auspices and rules of procedure of the American Engineering Standards Committee.

A special committee appointed by the association made the preliminary study on which was based the "Safety code for the use and care of abrasive wheels" issued by the Grinding Wheel Manufacturers' Association of the United States and Canada. (See p. 103.) The Safety Committee of the association has continued its cooperation in conducting the tests and compiling the tables for later editions.

NATIONAL METAL TRADES ASSOCIATION.

People's Gas Building, Chicago, Ill. Homer D. Sayre, secretary.

An employers' association organized in 1899 "for national, united action in handling unjust collective demands of organized labor and in treating with the labor question generally." Its annual convention is held in April, generally in New York, and a synopsis of proceedings is published. There are about 1,000 members and 28 local branches. The association is active in the open-shop campaign, and in conjunction with the National Founders' Association publishes the *Open Shop Review*.

Industrial education has been a matter of special concern to the association for many years. One of its early efforts in this field consisted in securing contributions from its members for equipment and scholarships at Winona Technical Institute, Indianapolis, and in giving financial support and other assistance to the institute for the maintenance and management of a metal trades department. In 1906 the first steps towards the inauguration of the cooperative course in engineering at the University of Cincinnati, under Dean Herman Schneider, were taken at a conference of the authorities of the Engineering College with the local branch of the association, whose members agreed to open their shops to students; and as a result of Dean Schneider's address on the subject at the 1908 convention the cooperative plan was introduced into the public schools of Fitchburg, Mass. In the same year the Chicago branch developed a plan of cooperation with Lewis Institute. Appropriations were made in 1911, 1914, and 1915 for advancing the work undertaken by the National Society for the Promotion of Industrial Education. (See p. 135.) Reports of committees on industrial education and apprenticeship were published annually in the synopsis of proceedings up to and including 1917, in which year the Smith-Hughes Act was passed.

COMMITTEE ON INDUSTRIAL EDUCATION.—Harold C. Smith, Illinois Tool Works, Chicago, Ill., chairman. The present committee, which has reported annually since 1919, has established at the national office of the association a Department of Industrial Education (Philip C. Molter, superintendent) and has had an individual survey made of the plants of the members of the association—about 1,000 in number (located east of the Mississippi River)—for the purpose of ascertaining what particular system of training was adaptable to a particular plant.

A session on April 21 at the 1921 convention was devoted to reports and papers on industrial education.

COMMITTEE OF WORKS' COUNCILS IN THE METAL TRADES made an investigation into the question of employee representation and a session was devoted to discussion of the subject at the 1920 convention.

NATIONAL RESEARCH COUNCIL.

1701 Massachusetts Avenue, Washington, D. C. Vernon Kellogg, permanent secretary.

Established in 1916 under the congressional charter of the National Academy of Sciences and organized with the cooperation of the national scientific and technical societies of the United States. During the war the National Research Council acted, in a cooperative capacity, as the Department of Science and Research of the Council of National Defense; also, as the Science and Research Division of the United States Signal Corps. In this connection, during the war, it received a considerable part of its support from the Government, but since its reorganization after the war it derives its support wholly from private sources. As now organized, the technical work of the council is distributed among its 13 divisions, 6 of which deal with the more general aspects and contacts of research (the divisions of Federal Relations, Foreign Relations, States Relations, Educational Relations, Research Extension, and the Research Information Service) and 7 with particular fields of science and technology (viz, Physical sciences, Engineering, Chemistry and chemical technology, Geology and geography, Medical sciences, Biology and agriculture, Anthropology and psychology). The personnel of these divisions and numerous committees is given in a pamphlet, "National Research Council: organization and members, 1920-21" (45 p.).

DIVISION OF ANTHROPOLOGY AND PSYCHOLOGY.—C. E. Seashore, chairman (1921-22). This is the successor of the Psychology Committee formed in April, 1917, to organize and supervise psychological research and service in the war emergency and of which various committees on military personnel problems appointed by the American Psychological Association became subcommittees. Among these were (1) the committee on the psychological examination of recruits which developed the plan of mental testing subsequently applied to the Army by a division of psychology created in the Office of the Surgeon General,²¹ (2) the committee on the selection of men for tasks requiring special aptitude, from which developed through the activity of two of its members—E. L. Thorndike and Walter Dill Scott—the Committee on Classification of Personnel in the Army.²² Other committees studied problems of vision, reeducation, incapacity, emotional stability, etc.; and psychological service was rendered to the Committee on Education and Special Training of the War Department and other military agencies. The report of the Psychology Committee, by Robert M. Yerkes, chairman, was published in the Psychological Review, March, 1919 (v. 26, p. 83-149), and issued

²¹ The tests used are given in "Army mental tests," by C. S. Yoakum and R. M. Yerkes (New York, H. Holt & Co., 1920); the official report, "Psychological examining in the United States Army," consisting of (1) history, organizations, and materials, (2) methods, and (3) results, was published as Memoirs of the National Academy of Sciences (v. 15).

²² An official account of the work of this committee was published by the War Department under the title, "The personnel system of the United States Army" (1919, 2 vols.).

also as No. 2 of the reprint and circular series of the National Research Council.

This division acts in an advisory capacity on research projects in its field. Committees on the following subjects organized under it deal with various phases of personnel research:

(a) *Anthropological and psychological study of the people of the United States*, with a subcommittee dealing with standardization of procedures for determining race characters.

(b) *Superior attainment of college students*.—This committee is conducting an organized search for research talent among college students, through committees organized for the purpose in the various universities and colleges. For the use of these committees it has prepared a printed blank for "Analyzed rating of fitness for graduate study." It proposes to issue shortly a series of bulletins on "Research opportunities" (including those in industrial establishments), eight of which are now ready for the printer.

(c) *Prediction of success of students entering higher institutions*.—This committee is concerned with the development of tests of fitness, e. g., advising in the investigation of the use of tests for engineering students being made under the Society for the Promotion of Engineering Education. (See p. 153.) It has prepared and published two "comprehension tests."

(d) *National intelligence tests*.—This committee, under a grant from the General Education Board, prepared an adaptation for school purposes of the group intelligence tests used in the examination of recruits in the Army. These tests, with a manual of directions, are published by the World Book Co., Yonkers, N. Y. An account of this work is given in a paper entitled, "The national intelligence tests," by Guy M. Whipple, in *Journal of Educational Research* (v. 4, No. 1, p. 16-31), June, 1921 (issued as a reprint by the committee).

(e) *Child welfare research*.

(f) *Problems of military psychology*, including methods of rating in the Army.

RESEARCH INFORMATION SERVICE.—Robert M. Yerkes, chairman and resident director. A clearing house for information about scientific methods and results and their practical applications in engineering, industry, and education. This service maintains a biographical file of scientists who are qualified by training and experience to conduct research in the physical or biological sciences or their respective technologies. Approximately 13,000 persons in the United States are already listed, and the data about them are being arranged by means of the Findex system for ready reference and mechanical sorting to meet the informational demands of scientific and industrial agencies.

COMMITTEE ON FOOD AND NUTRITION.—J. R. Murlin, University of Rochester, chairman. This committee under the Division of Biology and Agriculture has formulated an extensive and detailed program of research for which it is endeavoring to secure support. Among the projects outlined by the subcommittee on human nutrition are (1) the food requirements of children of different ages, including the effects of muscular work upon children; (2) nutrition in relation to the health and efficiency of industrial workers.

ASSOCIATIONS, SOCIETIES, FOUNDATIONS, ETC.

COMMITTEE ON INDUSTRIAL PERSONNEL RESEARCH.—Alfred Flinn, Engineering Foundation, New York, secretary. This committee represented the council in planning and conducting the conferences held in November, 1920, and March, 1921, which resulted in the formation of the Personnel Research Federation. (See p. 143.)

NATIONAL RETAIL DRY GOODS ASSOCIATION.

200 Fifth Avenue, New York, N. Y.

Organized in 1911 to promote and protect the interests of retail dry goods merchants throughout the United States. Annual conventions are held in New York City; there are also spring and fall meetings which may be held elsewhere. At the present time (March, 1921) the association has 2,234 members.

In addition to subsidiary groups devoted to financial and accounting problems, advertising, and transportation and shipping questions, there is a department of education under the direction of Mrs. Lucinda W. Prince, director of the Prince School of Education for Store Service, Boston, which conducts an information service on matters relating to training for retail selling, and holds special sessions on educational, employment, and research work in stores at the annual conventions.

A Committee for the Study of Wage Problems appointed by the board of directors in October, 1919, published a "Preliminary report of commission and bonus methods" (51 p.) in May, 1920.

BUREAU OF RESEARCH AND INFORMATION.—W. A. Fitzgerald, manager. This bureau, maintained at the New York office to collect data on the various problems of the retail dry goods trade, including personnel administration, issued to members in February, 1921, a confidential report on "Bonus methods for delivery department employees," containing a description of methods used in 15 different stores.

NATIONAL SAFETY COUNCIL.

168 North Michigan Avenue, Chicago, Ill. C. W. Price, general manager; Sidney J. Williams, secretary and chief engineer.

The first cooperative safety congress was held under the auspices of the Association of Iron and Steel Electrical Engineers at Milwaukee, Wis., September 30 to October 5, 1912, and a committee appointed at that congress was authorized to prepare plans for a national society, which was officially organized as the National Council for Industrial Safety in September, 1913. As the scope of its activities broadened, the name was changed to National Safety Council in the following year. This council is an association of companies and individuals interested in promoting safety in industrial establishments and also on the streets and in the home. Its field is the prevention of accidents, with related activities affecting the health, comfort, and welfare of industrial workers.

The present membership includes about 4,000 industrial concerns, operating more than 7,500 plants and employing more than 6,000,000 workers. To these it renders a safety service, consisting of posters for the bulletin board, a monthly magazine entitled *National Safety News*, "Safe practices" pamphlets, and consultation. Membership dues are based on the nature and extent of the service rendered and the number of employees on the pay roll of the concern.

The council also organizes schools for foremen and safety supervisors and has published in loose-leaf form outlines of lectures for such schools.

For Greater New York and the adjacent manufacturing district of New Jersey, the Metropolitan Safety Council has been formed by the National Safety Council and the Safety Institute of America (see p. 149) jointly; and in order to unify the work of the two organizations and prevent duplication they have entered into an agreement that all industrial plants in this district, which are members of either, shall be entitled to the joint service of both. This local council conducted lecture courses for foremen during 1920-21 at various places in its territory.

Safety congresses have been held annually since 1912 in different cities and the proceedings published. The present organization of the congress consists of Engineering, Public Safety, Education, Health Service, and Women in Industry sections, and the following sections devoted to safety in particular industries, viz: Automotive, Cement, Chemical, Construction, Electric Railway, Metals, Mining, Packers and Tanners, Paper and Pulp, Public Utilities, Rubber, Steam Railroad, Textile, Woodworking. Meetings on special topics are also held, e. g., at the ninth annual safety congress, 1920, on employees' benefit associations, and employees' publications.

The National Safety Council is sponsor for the safety codes on construction work, paper and pulp mills, and power presses, now in preparation by sectional committees under the auspices and rules of procedure of the American Engineering Standards Committee (see p. 72) and is joint sponsor for the textiles safety code and for the standard color scheme for pipe lines. It has been recommended and was approved conditionally in June, 1920, as sponsor for the safety codes on blast furnaces and blooming and rolling mills but has not yet accepted these sponsorships.

ENGINEERING DEPARTMENT.—Created in 1917, this department consists of safety engineers who have in charge the preparation of all the bulletins and "Safe practices" pamphlets and also serve the membership of the council by investigating and answering all inquiries for technical information.

"Safe practices" is a series of pamphlets, in each of which a particular hazard is discussed in detail and the safe practices in the construction and operation of the particular equipment involved are described. They represent the results of extensive research work by the engineers of the department, with the cooperation of a conference committee of safety engineers. The following numbers have been issued:

No. 1, Ladders; No. 2, Stairs and stairways; No. 3, Boiler rooms; No. 4, Cranes; No. 5, Belt shifters and belt shippers; No. 6, Knots, bends, hitches, and slings; No. 7, Belts and belt guards; No. 8, Shafting, couplings, pulleys, gearing; No. 9, Engine guarding and engine stops; No. 10, Oiling devices and oilers; No. 11, Floors and flooring; No. 12, Scaffolds (for industrial plant use); No. 13, Grinding wheels; No. 14, Goggles; No. 15, Freight elevators; No. 16, Safe clothing; No. 17, Yards; No. 18, Power presses; No. 19, Exits, fire alarms and fire drills; No. 20, Woodworking machinery and equipment; No. 21, Accident records; No. 22, Shop lighting; No. 23, Gas and electric welding; No. 24, Fire extinguishment; No. 25, Acids and caustics (industrial plants); No. 26, Manila and wire rope; No. 27, Drinking water, wash and locker rooms, and toilet facilities; No. 28, Commercial explosives; No. 29, Electrical equipment in in-

ustrial plants; No. 30, Trucks and wheelbarrows; No. 31, Fire causes and prevention; No. 32, Exhaust systems; No. 33, Hoisting apparatus; No. 34, Industrial explosion hazards: gases, vapors, flammable liquids and dusts; No. 35, Conveyers; No. 36, Fire brigades; No. 37, Industrial ventilation; No. 38, Safety bulletins and bulletin boards; No. 39, Machine shop machinery; No. 40, Suggestion systems; No. 41, Hand tools; No. 42, Industrial safety organization; No. 43, Passenger elevators; No. 44, The prevention of skin troubles from cutting oils and emulsions; No. 45, Industrial housekeeping.

Sectional: P. and P. 1, Paper and pulp mills; Me. 1, Cleaning and finishing rooms in foundries; Me. 2, Blast furnaces; M. 1, Underground mine cars and haulage.

HEALTH SERVICE SECTION.—This section originated at an industrial hygiene session at the annual safety conference in 1914 and has held meetings at each subsequent congress. At the 1919 congress it appointed a committee to investigate and report on the best modes of preventing and controlling skin diseases in industry and the best methods of treatment. The questionnaire sent out by this committee is given in *Modern Medicine* (v. 2, No. 2, Feb., 1920, p. 150).

NATIONAL SOCIETY FOR VOCATIONAL EDUCATION.

140 West Forty-second Street, New York, N. Y. Miss Clotilde Ware, office secretary.

Organized in 1906 as the National Society for the Promotion of Industrial Education; present name adopted in 1918. The objects of this society are (1) to afford all those who are interested, opportunities for the presentation and discussion of the various problems of vocational education; (2) to make available the results of the experience of those working in the various fields of vocational education, both in this country and abroad. At the present time (1921) there are 2,200 members, including educators, industrial managers, manufacturers, labor leaders, social workers, etc.

Annual conventions have been held in various cities, latterly in February. The proceedings are issued in the society's series of *Bulletins*. The 1920 convention at Chicago was a joint convention with the Vocational Education Association of the Middle West.

A special feature of the conventions at Richmond, Va. (1914), Minneapolis (1916), and Indianapolis (1917) was the holding of sessions devoted to the results of a vocational education survey of the city made in advance of the convention. In the case of the first two cities, the survey was made under the direction of a general survey committee of the society with funds provided locally and in cooperation with a local survey committee. The report of the Richmond (Va.), survey was published as *Bulletin No. 162 of United States Bureau of Labor Statistics*; the Minneapolis survey as *Bulletin No. 21 of the society* (also in revised form as *Bulletin No. 199 of United States Bureau of Labor Statistics*). The Indianapolis survey for vocational education was the sixth of a series of seven vocational surveys in Indiana undertaken by the State Board of Education, Indiana University, and local education authorities jointly, with the cooperation of this society, the reports of which were published by State Board of Education as the *Survey Series of its Educational Bulletins*.

An industrial art survey was undertaken by the society in 1920-21. The work has been completed but is not yet published.

Employment managers' conferences were held in connection with the annual conventions at Minneapolis (January, 1916) and Indianapolis (February, 1917). The proceedings of the first of these, published as Bulletin of the United States Bureau of Labor Statistics No. 196, are appended to the society's Bulletin No. 22; the proceedings of the second are included in its Bulletin No. 24 (p. 225-291).

A conference on training for salesmanship in retail stores was the first session of the 1914 convention; and beginning with the St. Louis convention of 1919, section meetings have been held on commercial education, devoted largely to the same subject, and on agricultural education, in addition to those on industrial education, to which the papers and discussions at the conventions had mainly been confined in previous years.

The following bulletins are studies made by special committees of the society appointed for the purposes indicated by the titles:

No. 4. Industrial training for women. By Florence M. Marshall, October, 1907. 59 p.

No. 8. Education of workers in the shoe industry. By Arthur D. Dean. Dec., 1908. 110 p.

No. 19. Selection and training of teachers for State-aided industrial schools. By C. A. Prosser and W. A. O'Leary. Feb., 1914; rev. ed. Feb., 1917. 64 p.

No. 23. Evening vocational courses for girls and women. Feb., 1917. 73 p.

The proceedings of the 1920 convention (Bulletin No. 32) contain reports of special committees on the following subjects: Vestibule and upgrading schools (p. 86-97); Vocational education in the continuation schools (p. 136-150); Vocational training for women in industry (p. 151-158); Vocational education in high schools (p. 159-183).

NATIONAL TUBERCULOSIS ASSOCIATION.

381 Fourth Avenue, New York, N. Y. Charles T. Hatfield, M. D., managing director.

Originally organized as the National Association for the Study and Prevention of Tuberculosis; present name adopted in 1918 and association incorporated under the laws of Maine. The following paragraphs summarize only the special activities of this association in the industrial field.

In December, 1916, the Framingham Community Health and Tuberculosis Demonstration was initiated by the association with a special fund of \$100,000 provided by the Metropolitan Life Insurance Co., which continues to finance it, as an intensive experiment to determine whether it is possible to reduce substantially the mortality and morbidity of tuberculosis, particularly in industrial communities. Its executive officer is Donald B. Armstrong, M. D., Community Health Station, Framingham, Mass.

The results of the experiment are set forth in Framingham Monographs, Nos. 1-8, subdivided into three series, viz: General series, Medical series, Sanitary series, of which No. 6 (Sanitary series II) published September, 1919, is devoted to schools and factories. The section of this monograph on the factories includes besides a general sanitary study of the great majority of the Framingham industries, (1) a special study of ventilation in certain typical plants, where

the questions of dust, fumes, chemicals, and general ventilation were touched upon, carried out with the cooperation of the New York State Commission on Ventilation (see p. 54), and (2) a special study of safety in a number of the Framingham plants, conducted by the American Museum of Safety. (See p. 149, Safety Institute of America.)

In 1918 the association detailed its field secretary, Dr. H. A. Pattison, to the Federal Board of Vocational Education to study the problem of vocational rehabilitation in the case of tuberculous soldiers and sailors, and appointed a committee to direct and assist him. The results of this work were published as:

U. S. Federal Board of Vocational Education. Bulletin No. 29 (Reeducation series No. 5). Treatment and training for the tuberculous, with standards by which to determine proper training and occupations for the tuberculous soldier, sailor, or marine. Mar., 1919, 22 p.

In August, 1921, the association began an investigation of the standards of employment for tuberculous persons, which will take about three years to complete. The study will involve an analysis of the operations or processes of the leading industries to determine what, if any, are their peculiar health hazards to tuberculous persons, or persons likely to become tuberculous, and also to ascertain in what particular departments persons who have had tuberculosis can be employed.

COMMITTEE ON MORTALITY FROM TUBERCULOSIS IN DUSTY TRADES.—Dr. Edward R. Baldwin, Saranac Lake, N. Y., chairman. Appointed in 1917, this committee has concentrated its efforts upon an investigation of the marble and granite industries of Vermont and the limestone industry of Indiana. Two preliminary reports were published in 1919—the first (27 p.) by the Working Conditions Service of the United States Department of Labor, the second (24 p.) by the National Tuberculosis Association—which are largely correspondence relating to the plan of the investigation and preliminary data.

Since then the following parts of the Vermont investigation have been completed: (1) A statistical survey, by Mr. Sylvester Schattschneider, of the Prudential Life Insurance Co., of the various features of the industry, and house-to-house visitation of the granite cutters, to obtain data on family and personal histories, housing conditions, etc.; (2) a study of the mortality records of the State of Vermont, which was summarized in an informal report to the association in 1920, by Dr. Frederick L. Hoffmann, former chairman of the committee. The results of the medical examinations, about 500 in number, were reported to the executive committee at the meeting of the association in June, 1921, and the report is being prepared for publication as a separate pamphlet.

In conjunction with this investigation some experimental work has been carried on at the Saranac Laboratory under a Trudeau Foundation fellowship (see p. 159) by Dr. L. U. Gardner. His first results were published in the *American Review of Tuberculosis* (v. 4, No. 10, Dec., 1920, p. 734-755) under the title "Studies on the relation of mineral dusts to tuberculosis, I. The relatively early lesions in experimental pneumokoniosis produced by granite inhalation and their influence on pulmonary tuberculosis."

NATIONAL VOCATIONAL GUIDANCE ASSOCIATION.

Anne S. Davis, Vocational guidance department, city schools, Chicago, secretary.

The organization of this association was completed during a series of meetings held at Grand Rapids, Mich., October 21-24, 1913. (Papers presented were published by United States Bureau of Education as Bulletin 1914, No. 14.) This was the third national conference on vocational guidance, previous meetings having been held at Boston in 1910 and New York City in 1912.

There are now about 300 members and eight branch associations, viz:

Vocational Guidance Association of New York City. Mrs. Marie Holl, 112 West Forty-sixth Street, secretary.

Chicago Vocational Guidance Association. Mary F. Stone, 607 Plymouth Court, secretary.

Vocational Guidance Association of Minneapolis. Hermione Dealey, Department of Educational Psychology, University of Minnesota, secretary.

Cincinnati Vocational Guidance Association. Mrs. Helen T. Woolley, Vocation Bureau, School Department, secretary.

Vocational Guidance Association of Philadelphia and Vicinity. Elmira A. Lodor, Kensington High School, secretary.

New England Vocational Guidance Association. Lewis A. Maverick, 1 Lawrence Hall, Kirkland Street, Cambridge 38, Mass.

California Vocational Guidance Association. Charles L. Jacobs, School of Education, University of California, Berkeley.

Kansas City, Kansas, Vocational Guidance Association. C. W. Shelley, 2300 North Twelfth Street, secretary.

It is planned this year (1921) to have each branch association make a study of some phase of vocational guidance.

NATIONAL WORKMEN'S COMPENSATION SERVICE BUREAU.

13 Park Row, New York, N. Y. Albert W. Whitney, general manager.

Established in December, 1910, by a group of casualty insurance companies to classify compensation and liability risks, regulate commissions and construct a standard manual; in May, 1911, the Bureau of Liability Insurance Statistics (organized 1896) was merged with it. The original name Workmen's Compensation Service and Information Bureau was changed to Workmen's Compensation Service Bureau in March, 1913, and the present style was adopted in June, 1916. Membership is open to companies engaged in liability or workmen's compensation insurance which are duly authorized to transact such business in any State of the Union.

In addition to establishing manual or basic rates for particular classifications, the bureau has prepared, tested, and published plans of (1) "schedule rating," for modifying the manual rates by giving credits or debits for good or bad physical conditions (e. g., in regard to use and efficiency of safety appliances) in the individual plant as revealed by inspection; and (2) "experience rating," for a further modification based on the actual experience of the plant in respect to casualties, etc. Both of these exert an important influence in the direction of accident prevention because they offer to the employer a pecuniary inducement for improving his risk and his experience. The bureau is, therefore, interested in all safety standards, primarily because of their direct bearing on rating, and has compiled the following handbooks:

Universal safety standards: a reference book of rules, drawings, tables, formula, data, and suggestion. By Carl M. Hansen. 2d ed. 1914. 312 p.
Safety in woodworking. 1918.

It is represented on the executive committee of the American Engineering Standards Committee (see p. 72) and is joint sponsor for three of the safety codes in process of development under its auspices and rules of procedure, viz, woodworking, power transmission, and machine tools. It is also represented on the sectional committees of a number of other codes.

The library of the bureau has issued in mimeographed form a number of reference lists on special subjects in the field of industrial hygiene and safety, e. g., manufacture of munitions and explosives from the standpoint of safety and health; the dust hazard in industry; industrial poisons; safety in machine shops and foundries; accident prevention in building construction and contracting; safety in conveying and hoisting; safety in electrical work; and a weekly bulletin of references arranged under subject headings.

NELA RESEARCH LABORATORY.

National Lamp Works of General Electric Co., Nela Park, Cleveland, Ohio. Edward P. Hyde, director of research.

Organized in the autumn of 1908 as the Physical Laboratory of the National Electric Lamp Association for the development of those branches of science with which the art of lighting is closely associated (e. g. physics, physiology, and psychology); present name adopted January, 1914, in consequence of a business reorganization which did not, however, affect the continuity of the work of the laboratory.

The results of the investigations carried out in this laboratory have been presented before various American scientific and technical societies and have been published in their proceedings or in scientific and technical journals. Abstracts of all papers up to January, 1916, have also been published in the Laboratory's Abstract-Bulletin (v. 1, Nos. 1, 2). The studies of physiological and psychological aspects of lighting made by the staff include the following:

Ives, Herbert E. A visual acuity test object. (Elec. World, v. 55, 1910, p. 939; Abstract No. 7.)

Cobb, Percy W. The influence of illumination of the eye on visual acuity. (Amer. Jour. Physiol., v. 29, 1911, p. 76; Abstract No. 8.)

Cobb, Percy W., and Geissler, L. R. The effect on foveal vision of bright surroundings. (Psychol. Rev., v. 20, 1913, p. 425-447.)

Cobb, Percy W. The effect on foveal vision of bright surroundings II, III, IV. (Psychol. Rev., v. 21, 1914, p. 23-32; Jour. Exper. Psychol., v. 1, No. 5, Oct., 1916, p. 419-425; v. 1, No. 6, Dec., 1916, p. 540-566.)

— The influence of pupillary diameter on visual acuity. (Amer. Jour. Physiol., v. 36, 1915, p. 335; Abstract No. 53.)

— Eye-function and light. (Cleveland Med. Jour., v. 15, Mar., 1916, p. 164.)

Lucklesh, M. Monochromatic light and visual acuity. (Elec. World, v. 58, 1911, p. 450; Abstract No. 9.)

— The dependence of visual acuity on the wave-length of light. (Elec. World, v. 58, 1911, p. 1252; Abstract No. 10.)

— Visual acuity in white light. (Elec. World, v. 62, 1913, p. 1160; Abstract No. 54.)

— Radiant energy and the eye. (Elec. World, v. 62, 1913, p. 844; v. 66, 1915, p. 576; Abstract No. 60.)

— Glasses for protecting the eyes in industrial processes. (Trans. Illum. Eng. Soc., v. 9, 1914, p. 472; Abstract No. 62.)

Burge, W. E. The injurious effect of ultra-violet radiation on living tissue. (Trans. Illum. Eng. Soc., v. 10, 1915, p. 932; Amer. Jour. Physiol., v. 36, 1914, p. 21; v. 39, 1916, p. 335; Elec. World, v. 65, 1915, p. 912; Abstract No. 61.)

Johnson, H. M. The influence of the distribution of brightness over the visual field on the time required for discriminative responses to visual stimuli. (Psychobiology, v. 1, No. 6, May, 1918, p. 459-494.)

— The dynamogenic influence of light on tactile discrimination. (Psychobiology, v. 2, No. 4, Aug., 1920, p. 351-374.)

NEW JERSEY STATE CHAMBER OF COMMERCE.

Clinton Building, Newark, N. J.

BUREAU OF STATE RESEARCH.—Paul Studensky, supervisor of staff. Established in 1915 to make impartial investigations of questions of public interest on which the State chamber desires data as a basis for action. Articles and brief reports by its staff are published in *New Jersey*, issued monthly by the State chamber, or is the weekly Legislative Index, issued by the bureau during each legislative session; the results of its more extensive studies appear as consecutive numbers of *State Research* (a supplement section of *New Jersey*).

Originally its research activities were directed to governmental problems in the State. Among its published reports on such subjects is a series in the field of personnel administration dealing with teachers', police, firemen's, and other local employees' pension systems prepared for the New Jersey Pension and Retirement Fund Commission in the work of reorganizing the State and municipal funds on a sound actuarial basis (published 1917-1919 as *State Research*, Consecutive Nos. 8-13, 16).

The experience thus gained was made available for industrial concerns by the establishment of a special Department for the Advancement of Sound Benefit Funds in the bureau to advise employers and employees regarding the best methods to be followed in the adjustments of benefits and contributions and to perform the technical work for them. A report entitled "Broadening the scope of pensions in private industry," by Paul Studensky, was published as *New Jersey*, v. 6, No. 8, May, 1919.

On the subject of housing, a report entitled "A practical building program to meet the immediate and permanent needs of New Jersey industry," by Lillian Erskine, was issued as *State Research*, Consecutive No. 17, June, 1919.

In December, 1918, January and March, 1919, the State chamber held three conferences on industrial relations, of which the proceedings were published in *New Jersey* (v. 6, Nos. 4-6). As a result of these the bureau was directed to collect the various plans and schemes for organizing employee representation in shop management, analyze these systems and prepare a report thereon, which was subsequently published under the title "Shop committees and industrial councils," parts 1 and 2, as *State Research*, Consecutive No. 18, July, 1919 (64 p.). It also formulated a plan for the establishment of a Joint Industrial Council for New Jersey (in *New Jersey*, v. 6, No. 10). A fourth conference on industrial relations was held in September, 1919 (proceedings in *New Jersey*, v. 6, No. 11), and the fifth of the series in November, 1920.

A Committee on Industrial Relations was appointed in December, 1920, to continue consideration of questions in this field, and for this committee the bureau is making investigations on the "closed shop"

and "open shop." An introductory report on "Closed shop and open shop terminology" has been issued as *New Jersey*, v. 8, No. 2.

NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR.

105 East Twenty-second Street, New York, N. Y.

DEPARTMENT OF SOCIAL WELFARE.—John C. Gebhart, director. Established in April, 1913, by Mrs. Elizabeth Milbank Anderson to "foster preventive and constructive social measures for the welfare of the poor of this city, as distinguished from relief measures affecting particular individuals and families." Its principal work at the present time is centered in the Bureau of Welfare of School Children. It has also a Nutrition Bureau (formerly Bureau of Food Supplies) which carries on research work in food economics and has published the following study of 92 family dietaries (Publication No. 121 of the Association):

Sherman, H. C., and Gillett, L. H. The adequacy and economy of some city dietaries. 1917. 32 p.

Attached to this department is the New York State Commission on Ventilation (see p. 54), endowed in June, 1913, with a special fund of \$50,000 by Mrs. Elizabeth Milbank Anderson to enable it to carry out an important part of the original program of the department as outlined in the letter of gift, i. e., to establish by research and experimental work adequate scientific and practical standard methods of ventilation for home, school, and workshop.

DEPARTMENT OF FAMILY WELFARE.—This department has under its direction the work of the association which deals more particularly with individual families. The Bureau of Family Rehabilitation and Relief has accumulated considerable data on family budgets through the requirement that such a record shall be kept by practically all of the families receiving allowances sufficient for their maintenance, which are based on estimates made by the bureau's dietitians.

NUTRITION LABORATORY.

Vila Street, Boston, Mass. Francis G. Benedict, director.

This laboratory, erected 1907-8, is one of the research departments of the Carnegie Institution of Washington. The investigations in nutrition, to which it is devoted, originated with the late Prof. W. O. Atwater, of Wesleyan University, Middletown, Conn., and during the years 1903 to 1907 grants were made to him and to the present director. The equipment comprises a variety of apparatus for observations on metabolism and for related investigations, including respiration calorimeters, apparatus for recording muscular activity and other physiological phenomena, bicycle ergometers and treadmills for muscular work, etc. A psychological laboratory provides for observations on physical and mental efficiency particularly as influenced by various foods, drugs, and fatigue.

The researches undertaken, which are of interest in the field of industrial physiology and psychology, include observations on the influence of various factors upon metabolism, as the ingestion of foods, breathing of oxygen-rich atmospheres, variations in temperature environment, muscular activity; observations on the effect of undernutrition on physical and mental well-being; the ingestion of

alcohol as influencing psychological processes in general and also skilled muscular performance; (in progress) respiratory exchange during muscular work and influence of alcohol on fatigue and recuperation. The results of these investigations published thus far are contained in the following Publications of the Carnegie Institution of Washington:

No. 187. Benedict, Francis G., and Cathcart, E. P. Muscular work: A metabolic study with special reference to the efficiency of the human body as a machine. 1913. 176 p.

No. 232. Dodge, Raymond, and Benedict, F. G. Psychological effects of alcohol. An experimental investigation of the effects of moderate doses of ethyl alcohol on a related group of neuro-muscular processes in man. 1915. 281 p.

No. 266. Miles, Walter R. Effect of alcohol on psycho-physiological functions. 1919. 144 p.

No. 280. Benedict, Francis G., and others. Human vitality and efficiency under prolonged restricted diet. 1919. xi, 702 p.

OHIO COUNCIL ON WOMEN AND CHILDREN IN INDUSTRY.

305 Bank of Commerce Building, Toledo. Miss Amy G. Maher, chairman.

This council was formed in December, 1919, and consists of representatives of 25 organizations concerned with industrial problems, besides a number of interested individuals. Its object is to make unbiased investigation into conditions calling for proposed legislation, and studies of its results in places where it is already in operation, and probable effects, if passed, on various industries and localities in Ohio; and on this basis to develop a legislative program in the interest of women and children in industry which can be supported by the united strength of its constituent organizations and a State-wide public opinion.

It has recently published interim reports of an investigation undertaken with a view to securing data bearing on a minimum wage law for the State of Ohio. The second section is devoted to a study of the cost of living in the case of women in various occupations all over the State. A summary of the reports is given in *Monthly Labor Review*, U. S. Bureau of Labor Statistics, February, 1921 (p. 97-100).

The results of an unemployment survey made by the council in 1921 have been published under the title "Ohio and unemployment in 1920-21" (40 p.).

PACIFIC COAST BUREAU OF EMPLOYMENT RESEARCH.

455 Flood Building, San Francisco, Calif. Wilford E. Talbert, director.

Organized in the fall of 1919 (1) to render "community service" and (2) to serve individual corporations in matters affecting the relations between employer and employee. By "community service" was meant those activities which would make for better industrial relations in the community as a whole. In June, 1920, its subscribers were organized to form the Personnel Club, which issued the proceedings of monthly meetings in its official organ, *Personnel Club Exchange* (mimeographed) to July, 1921. This publication superseded *Employment Problems* (v. 1, No. 1, Sept., 1919), information service bulletins, and the monthly news letters previously sent to subscribers. In July, 1921, the Personnel Club merged with the Industrial Relations Association of California.

The bureau has made a study for one of the street railways to determine whether or not it is possible to select in advance those motormen who will be least liable to accidents. It is also making, at the request of the Chamber of Commerce, a preliminary survey of the building industry in San Francisco, with particular reference to the elements of personnel administration which are involved. Other research work done by the bureau applies only to individual corporations and the results have been considered confidential.

A general intelligence test for business institutions, designed by Arthur S. Otis, of its staff, has recently been published by the World Book Co., Yonkers, N. Y.

PENNSYLVANIA STATE CHAMBER OF COMMERCE.

Telegraph Building, Harrisburg, Pa.

RESEARCH BUREAU.—Leonard P. Fox, director. As part of its health insurance investigation in 1919 this bureau made a study of sickness absenteeism in Pennsylvania from reports furnished by its members with regard to their establishments. The results are published in its "Special report on health insurance," 1919 (p. 41-91).

PERSONNEL RESEARCH FEDERATION.

29 West Thirty-ninth Street, New York, N. Y. Leonard Outhwaite, acting director; Alfred D. Flinn, secretary.

Organized March 15, 1921, at a conference on personnel research held under the auspices of the National Research Council and Engineering Foundation, following a preliminary conference held November 12, 1920, under the same auspices to consider the practicability of bringing about cooperation among the many bodies conducting research relating to men and women in industry and commerce, from management to unskilled labor.

The object of the federation is defined to be "the correlation of research activities pertaining to personnel in industry, commerce, education, and government, wherever such researches are conducted in the spirit and with the methods of science." To this end the federation will—

(a) Create a clearing house for information pertaining to research agencies in the field of personnel, the scope and facilities of such agencies, and researches already completed or in progress.

(b) Study whether and to what extent research effort may be harmonized, duplication minimized, neglected phases of the problem considered, and advanced work undertaken.

(c) Formulate a comprehensive general plan through which research activities may be correlated and in accordance with which future work may develop.

The charter member organizations are National Research Council, Research Information Service (see p. 132); Engineering Foundation (see p. 102); American Federation of Labor; Bryn Mawr College, Carola Woerishoffer Department of Social Economy and Social Research (see p. 166); Bureau of Industrial Research (see p. 87); Carnegie Institute of Technology, Bureau of Personnel Research (see p. 169); National Committee for Mental Hygiene (see p. 122); University of Pennsylvania, Department of Industrial Research (see p. 191).

Provision is made in the constitution for four classes of members paying annual dues as follows:

(1) Voting members (scientific, engineering, labor, management, employer, educational, and other organizations engaged in personnel research), \$100.

(2) Cooperating members (individuals and organizations contributing results of research they may conduct)—(a) Government agencies, no dues for those agencies prevented by legal restrictions from paying such dues, others \$50; (b) educational institutions, \$15; (c) associations, \$50; (d) corporations, \$50; (e) individuals, \$5.

(3) Sustaining members—(a) individuals, \$100; (b) corporations, \$250; (c) associations, \$250; (d) patrons (individuals, corporations, or associations), \$500 or more.

The first general meeting is to be held November 21, 1921.

PHILADELPHIA CHAMBER OF COMMERCE.

Widener Building, Philadelphia, Pa.

INDUSTRIAL RELATIONS COMMITTEE.—E. T. Trigg, chairman. In February, 1921, this committee held a conference at Philadelphia of representatives of the various interests involved in the construction industries. Its proceedings and those of a national conference held in Chicago, March 2-3, 1921, by the National Federation of Construction Industries, have been published together under the title:

Proceedings of the Philadelphia and National Conference on the Construction Industries. Philadelphia. 1921. 254 p., charts. 4°.

Chapter 6 (p. 66-82) is devoted to living costs, wages and hours of labor; chapter 8 (p. 129-158) to the viewpoint of union labor on industrial conditions.

PHIPPS INSTITUTE.

See under University of Pennsylvania (p. 191).

PORTLAND CEMENT ASSOCIATION.

111 West Washington Street, Chicago, Ill.

This association issues a bimonthly *Accident Prevention Bulletin*, which contains papers on health and accident hazards of the cement industry. It has prepared annually since 1913 a "Study of accidents" occurring in the plants of member companies, the 1920 report being published in the July-August, 1921, number of the *Accident Prevention Bulletin* (v. 7, No. 4).

PRUDENTIAL INSURANCE CO. OF AMERICA.

Newark, N. J.

STATISTICIAN'S DEPARTMENT.—Frederick L. Hoffman, third vice president and statistician. This department has given special attention to industrial mortality and in the course of the last 25 years has accumulated a large collection of data on practically every occupation or industry and the occupational diseases or special mortality problems related thereto, including material obtained through its own specialized field investigations. Its studies in this field are made primarily for occupational rating purposes but many of the results have a broader scientific value. Some of this material has been made available in Bulletins of the United States Bureau of Labor Statistics—No. 157, Industrial accident statistics, 1915; No. 231, Mortality from respiratory diseases in dusty trades (inorganic dusts), 1918; No. 293, The problem of dust phthisis in the granite stone in-

dustry, 1921 (in press)—prepared by Dr. Hoffman, and in the following publications on industrial hygiene issued by the company:

Industrial accidents and trade diseases in the United States. 1912.

Industrial accidents in the United States and their relative frequency in different occupations. 1914. 28 p.

The mortality from diseases of the lungs in American industry, by F. S. Crum. 1916. 31 p.

Menace of dust, gases and fumes in modern industry. 1918.

Occupational diseases and their compensation, with special reference to anthrax and miners' lung diseases, by F. L. Hoffman. 1920. 45 p.

The mortality from respiratory diseases in the glass industry. 1920.

Investigations have also been made in connection with the work of the Committee on Mortality from Tuberculosis in Dusty Trades, National Tuberculosis Association (see p. 137), of which Dr. Hoffman was formerly chairman.

RED CROSS INSTITUTE FOR CRIPPLED AND DISABLED MEN.

See Institute for Crippled and Disabled Men (p. 108).

RED CROSS INSTITUTE FOR THE BLIND.

Baltimore, Md. Charles F. F. Campbell, director.

Established in 1918 at General Hospital No. 7, Baltimore, Md., for the purpose of assisting the Medical Department of the Army in the reeducation and rehabilitation of the blind of the United States military forces.

To determine the best method of doing the work, experimental investigations were made along various lines for the purpose of planning courses of study based upon the findings. A program of industrial surveys was worked out in consultation with a number of prominent engineers, and the services of Mr. A. B. Segur, consulting industrial engineer, were secured to carry it out. The basis of this work consisted of a careful classification of the industries from which typical plants could be chosen for survey, and a standardized questionnaire outlined and sent to each plant which would serve as a basis for future analysis and study.

The intention when these surveys were started was to make a general analysis of all jobs in the industries of this country that could be done by blind persons after receiving the necessary amount of training, away from the job and on the job. However, as the work of training the ex-service men continued, those undertaking it gradually learned that very few of the men would be willing to accept factory jobs because of the independence gained through the payment of insurance and compensation made by the Government. It, therefore, became necessary to alter the policy and provide vocational training which would fit the men for the operation of small independent businesses. The work of making industrial surveys was accordingly discontinued, as it did not meet the immediate requirements. An extensive report, containing much detailed technical information about the industrial plants surveyed before the work was abandoned, is on file at the institute. A great deal of the information obtained is held as confidential. An article describing some features of this work, entitled "Taking the guesswork out of employment," by Alfred Fischer, was published in *Factory* (v. 23, No. 5, Nov., 1919, p. 1057-1058).

The industrial department provides instruction in automobile repair, tire vulcanizing, and cigar making, to fit the men to work in shops as employees, and management courses are also given to enable them to operate unit industries in these lines.

Current information about the work of the institute is contained in its monthly publication *Evergreen Review*, issued since January, 1920.

In 1918-19 translations of papers on the rehabilitation and employment of war blind in foreign countries were printed as Publications of the Red Cross Institute for the Blind, Nos. 1-4.

RESEARCH BUREAU FOR RETAIL TRAINING.

See Carnegie Institute of Technology (p. 171).

RETAIL RESEARCH ASSOCIATION.

225 Fifth Avenue, New York, N. Y.

An organization of large retail establishments (18 firms at present, only one from any community), for cooperative research covering the whole range of department store functions. Contributions to meet the financial requirements of its budget are assessed on turnover.

PERSONNEL AND ORGANIZATION DIVISION.—Philip J. Reilly, in charge. Organized July, 1919, this division has made a personnel audit of each member store and recommended to the proprietors personnel administration plans based thereon. It has held three semiannual conferences on common problems as follows: First, October, 1919, application blanks, service records, rating scales, leaving slips, etc.; Second, May, 1920, systems of wage payment and other financial inducements; Third, October, 1920, comparisons of methods of training departments. The next (to be held in 1921) will be devoted to shop councils, benefit associations, and other employee activities. Prior to each conference comparative data on the subjects to be considered are collected by questionnaire and three or four months' field work and digested in convenient form as a basis for the discussions.

A short training course for buyers of the member stores is conducted at the association's office in New York.

In 1920 the chief of the division visited London and prepared a "Report on staff administration at Harrods (Ltd.)," which has been printed by that firm.

The following are being prepared in cooperation with the personnel departments of the member stores: (1) A standard practice manual on merchandise for teaching sales people, (2) a basis for trade tests, and (3) a loose-leaf manual of personnel information, giving a summary of experience and standard practice.

The results of the association's researches are available to members only.

ROCHESTER CHAMBER OF COMMERCE.

Rochester, N. Y.

INDUSTRIAL MANAGEMENT COUNCIL.—Eliott Frost, director. Formed in 1916, the purpose of this council is "through cooperation, investigations by paid experts, and systematic interchange of ideas and information to secure for members the benefits of the best, most

efficient, and most economical factory methods in use." It comprises in its membership 41 of the largest industrial concerns in the city and its work is supported by assessments levied on the firms participating which are based on the number of persons they employ. It is organized in six groups, viz: Managers, Superintendents, Employment and service, Production methods, Cost accountants, Tax.

Among the reports prepared by the staff at the request of members in 1920 was one on bonus systems for foremen executives. It has recently taken over the work of preparing local cost of living statistics every month, which has heretofore been carried on by one of the industries of the city over a period of years. One of the groups of the council is at the present time at work upon the standardization of a table for accurately figuring turnover.

COMMERCIAL AND INDUSTRIAL EDUCATION COMMITTEE.—In 1915 this committee published a report of its "Survey of needs in commercial education" (18 p.). There was also made a survey of industrial establishments which furnished material for "Vocations for Rochester boys and girls: Bulletins Nos. 1-4," by R. C. Keople, issued by Rochester (N. Y.) Department of Public Instruction, 1915, as follows:

No. 1, Machine industry, 9 p.; No. 2, Woodworking industry, 4 p.; No. 3, Clothing industry for girls, 7 p.; No. 4, Collar factories, 4 p.

RUSSELL SAGE FOUNDATION.

130 East Twenty-second Street, New York, N. Y. John M. Glenn, secretary and general director.

Incorporated under the laws of the State of New York in April, 1907, with an endowment of \$10,000,000 given in memory of her husband by Mrs. Russell Sage, to which she added \$5,000,000 in 1918, the purpose of the foundation, as stated in its charter, is "the improvement of social and living conditions in the United States of America." Research and publication are the means to this end which have been employed.

Its research work has been organized under the following departments: Charity organization, Child helping, Education, Industrial studies, Library, Recreation, Remedial loans, Surveys and exhibits.

The publications of the foundation contain the results of original researches carried on under it by members of its staff or by experts commissioned for special studies, and also of special investigations such as the Pittsburgh Survey,²³ which the foundation financed but did not direct, and the Cleveland Survey,²⁴ directed by a member of its staff for another foundation. A printed price-list may be obtained from the Publication Department.

The following industrial studies in the list deal with child labor, cost of living, fatigue and efficiency, hours of work, industrial acci-

²³ This was planned and conducted by Paul U. Kellogg, editor, and his associates in the publication of *The Survey*.

²⁴ A survey of the public schools of Cleveland, Ohio, undertaken by the Survey Committee of the Cleveland Foundation and carried out under the direction of Dr. Leonard P. Ayres (then director, division of education, Russell Sage Foundation), who edited the findings, published as *The Cleveland Survey Monographs*, in 25 volumes. Among these are 9 vocational monographs, descriptive of occupations and the training required for them, viz: Boys and girls in commercial work, by Bertha M. Stevens; Department store occupations, by Iris P. O'Leary; Dressmaking and millinery, by Edna Bryner; Railroad and street transportation, by R. D. Fleming; The building trades, by F. L. Shaw; The garment trades, by Edna Bryner; The metal trades, by R. R. Lutz; The printing trades, by F. L. Shaw; Wage earning and education, by R. R. Lutz.

dents, industrial education, seasonal employment, trade unionism, unemployment, wages, or women's work:

- Anthony, Katherine S. Mothers who must earn. 1914. 223 p. (Issued with Cartwright, Otho G. The middle West Side. 67 p.)
- Barnes, Charles B. The longshoremen. 1915. 287 p.
- Butler, Elizabeth B. Saleswomen in mercantile stores. 1912. 217 p.
- Goldmark, Josephine. Fatigue and efficiency: a study in industry. 1912. 302 p.
- Hewes, Amy, and Walter, Henriette R. Munition makers. 1917. 158 p. (Part I is a study of women as munition makers in Bridgeport, Conn.; Part II is a summary of British reports.)
- Odencrantz, Louise C. Italian women in industry: a study of conditions in New York City. 1919. 345 p.
- Van Kleeck, Mary. Artificial-flower makers. 1913. 261 p.
- A seasonal industry: a study of the millinery trade in New York. 1917. 276 p.
- Women in the bookbinding trade. 1913. 270 p.
- Working girls in evening schools: a statistical study. 1914. 252 p.
- The Pittsburgh Survey (findings in 6 vols. ed. by Paul U. Kellogg): Women and the trades, by Elizabeth B. Butler, 1909, 440 p.; Work accidents and the law, by Crystal Eastman, 1910, 335 p.; Homestead: the households of a mill town, by Margaret F. Byington, 1910, 292 p.; The steel workers, by John A. Fitch, 1910, 380 p.; Wage-earning Pittsburgh, by Paul U. Kellogg and others, 1914, 582 p.; The Pittsburgh district civic frontage (by various investigators), 1914, 554 p.

DEPARTMENT OF INDUSTRIAL STUDIES.—Mary Van Kleeck, director. This department originated as the Committee on Women's Work, organized in 1908 by the Alliance Employment Bureau with support from the Foundation, becoming one of its departments in the following year. In 1916 the present name was adopted and it is now engaged in the study of industrial conditions affecting both men and women.

The purpose of its present series of investigations is to make an accurate and impartial record of typical experiences in industry in the United States in securing for the workers participation in determining the conditions of employment, in the belief that an analysis of experience will afford a basis for constructive action by employers and workers in improving industrial relations. Studies of the industrial representation plan of the Colorado Fuel & Iron Co. and the contract of the United Mine Workers, the works' council at Rock Island Arsenal, and the partnership plan at Dutchess Bleachery, Wappinger's Falls, N. Y., have recently been completed or are still in progress.

DEPARTMENT OF SURVEYS AND EXHIBITS.—Shelby M. Harrison, director. Industrial investigations have been included as integral parts of the city surveys made and directed by this department at Springfield, Ill., Topeka, Kans., and Newburgh, N. Y.

In 1919 this department began a study of public employment service—its organization and administration, the technique of the local service, and its place and function in industrial life. The field work has been completed and a report of progress was made in a paper read at the Ottawa meeting of the International Association of Public Employment Services, October, 1920. The complete report is to be sent to the printer about October, 1921.

SAFETY INSTITUTE OF AMERICA.

261 Madison Avenue, New York, N. Y. Riley M. Little, director.

Organized in 1909 as the Museum of Safety and Sanitation; incorporated in 1911 by special charter from the New York State Legislature (Laws, 1911, c. 152) under the name, American Museum of Safety; present name adopted January 1, 1919. The objects of the institution are the prevention of accidents, the elimination or lessening of occupational diseases, and the promotion of industrial welfare through health, efficiency, and cooperation.

There are three classes of members—individual (annual dues, \$10), commercial (annual dues, \$25), and industrial (annual dues \$100). The dues for commercial members include the special report service on any phase of accident prevention or industrial hygiene upon which the member desires information; and in addition to this, industrial members are entitled to an illustrated lecture on safety and industrial hygiene and the free inspection service.

The institute has entered into an agreement with the National Safety Council (see p. 133) to unify the work of the two organizations in the Metropolitan District in order to prevent duplication. All industrial plants in this district which are members of either, become entitled to the joint service of both. The two bodies have organized the Metropolitan Safety Council for carrying on an active safety campaign.

The institute maintains at its headquarters a permanent exhibit of approved safety and sanitary appliances and a special free reference library.

Its research work is represented by the consultation service reports, prepared in response to inquiries from members, which are filed and indexed in the library, and by articles prepared by its staff for publication in its bulletin *Safety*, published monthly, December, 1913, to December, 1920 (now temporarily suspended). The results of an investigation made by the institute jointly with the New York State Commission on Ventilation (see p. 54) on "Determination of standards for the atmospheric dust content in factories and workshops," by H. C. Ward, were published in *Safety* (v. 4, No. 7, July-Aug., 1916, p. 166-171). In 1917 in connection with the Framingham Community Health and Tuberculosis Demonstration undertaken by the National Tuberculosis Association (see p. 136) a survey of the various industrial establishments was conducted by Mr. A. S. Regula of the technical staff of the institute, with a view to indicating the most important features of the problem of safeguards for mechanical equipment and developing monthly foremen's meetings to educate them in the elementary essentials of safety devices and safety practices.

A volume of lectures given by the institute on alternate Saturday mornings, February to June, 1919, for the benefit of factory inspectors employed by the city of New York, the States of New York and New Jersey, and insurance companies was published in 1920 under the title "Safety fundamentals" (228 p.).

The institute awards two gold medals for the encouragement of research and invention in its special field, viz:

The Scientific American gold medal, for the most efficient safety device invented within a certain number of years and exhibited at the museum.

The Louis Livingston Seaman gold medal, for progress and achievement in the promotion of hygiene and the mitigation of occupational disease.

SCOTT CO. LABORATORY.

Drexel Building, Philadelphia, Pa. L. B. Hopkins in charge.

Established in 1919 by the Scott Co. for the purpose of carrying on both specific and general research in the field of industrial personnel. The Scott Co. is an outgrowth of the Committee on Classification of Personnel in the Army, in the work of which its nine active members were associated during the war. In June, 1919, they organized this firm of consultants and engineers in industrial personnel, which was incorporated as a personal service corporation under the laws of Pennsylvania (Walter Dill Scott, president; Beardsley Ruml, secretary). As consultants, its service is available at a consultant's fee, including a specific research of long duration in a particular plant or company. Out of its earnings the general research work of the laboratory is supported and the results are made available for the advancement of scientific knowledge in the field of industrial personnel, in the form of mimeographed bulletins, as follows:

Apprentice Manual.

A Plan of Apprentice Training.

Departmental Interview Bulletins, Nos. 1, 2; D. I. 1, Departmental interviews; D. I. 2, Measuring the importance of merchandise knowledge among retail sales people.

Labor Turnover Bulletins, Nos. 1-5; L. 1, The labor turnover daybook; L. 2, Turnover and mental alertness test scores; L. 3, General intelligence and instability; L. 4, Relation between age and length of service in common labor; L. 5, Labor turnover in relation to length of service.

Mental Alertness Bulletins, Nos. 1-11; M. A. 1, Description of the Scott Co. mental alertness tests (series I); M. A. 2, Mental alertness tests as a measure of the general value of office employees; M. A. 3, Comparison of mental alertness scores of men and women office employees; M. A. 4, Differences in mental alertness scores in different office departments; M. A. 5, Mental alertness standards for various occupation groups; M. A. 6, Mental alertness tests as a basis for classification in factory schools; M. A. 7, Significance of relation of mental alertness scores of applicants to mental alertness scores of employees; M. A. 8, Significance of the mental alertness scores of the women office employees in four companies; M. A. 9, Differences between men and women office employees; M. A. 10, Mental alertness of messenger and office boys; M. A. 11, Foremen's training and mental alertness.

Qualification Card Bulletins, Nos. 1, 2; Q. C. 1, The employee's qualification card; Q. C. 2, Construction of qualification cards.

Rating Scale Guide.

Rating Scale Bulletins, Nos. 1-3; R. S. 1, The graphic rating on workers; R. S. 2, A method of efficiency rating for foremen; R. S. 3, The experimental development of the graphic rating method.

Service Bulletin No. 1; S. 1, The development of a factory library.

Trade Test Guide, Army type.

Trade Test Bulletins, Nos. 1-4; T. T. 1, What is a trade test? T. T. 2, The making of the Army type of trade test; T. T. 3, File clerk test standards; T. T. 4, The file clerk's test.

Wage Bulletins, Nos. 1, 2; W. 1, A procedure in wage adjustment; W. 2, Ratings and wage adjustments.

Single copies of the above are available to anyone whose standing is a guarantee that these instruments for research will not be mis-

used. Tests, rating scales, and various forms for recording and accumulating information about personnel have been devised and are sold in quantities at cost under the same conditions.

The following contributions by members of the staff have appeared in psychological journals:

Ruml, B. The need for an examination of certain hypotheses in mental tests. (*Jour. Philos. Psychol. & Sci. Methods*, v. 17, No. 3, Jan. 29, 1920, p. 57-61.)

Kornhauser, A., and Ruml, B. Recent developments in trade-test theory. (*Psychol. Bull.*, v. 17, No. 2, Feb., 1920, p. 79-80.)

Paterson, D. G., and Ruml, B. The extension of rating scale theory and technique. (*Psychol. Bull.*, v. 17, No. 2, Feb., 1920, p. 80-81.)

Hayes, Mary H. S., and Paterson, D. G. Experimental development of the graphic rating method. (*Psychol. Bull.*, v. 18, No. 2, Feb., 1921, p. 98-99.)

Tables to facilitate the computation of coefficients of correlation by the rank difference method. (*Jour. App. Psychol.*, v. 4, Nos. 2-3, June-Sept., 1920, p. 115-125; also issued as a reprint by the Journal.)

SCOVILL MANUFACTURING CO.

Waterbury, Conn.

DEPARTMENT OF INDUSTRIAL HYGIENE.—A. H. Ryan, M. D., director. Established in November, 1919, to conduct research and to apply present knowledge to the improvement of working conditions and the increase of human efficiency in industry; in the performance of these functions the initiative regarding the particular problems to be undertaken may come from the department itself or the management. The company agreed to allow academic freedom in the research undertaken and the use of the results. The departmental staff consists of the director, two full-time research assistants and secretary; and the director is one of the advisory staff of the general superintendent. The equipment of the department includes physiological, psychological, and chemical laboratories, an experimental shop room in which operations are brought near to the laboratories for the purpose of closer study, and a research library. The services and equipment of other departments, including tool and machine and photographic departments, chemical and electrical research laboratories, hospital, etc., may be obtained when required.

Among the problems upon which the advice of the department has been sought are the following: Sanitation and ventilation of the plant and buildings; standards for selection of workers for operations, and methods of application; physical standards for occupations; fatigue in connection with the planning of operations and piece-rate setting; accident and illness in relation to occupations—their determination, causation, and prevention; occupational placement of handicapped; functional specialization in group work; methods of increasing efficiency in the employment of the special senses; occupational classification; personnel statistics; absenteeism and turnover with reference to occupation; first-aid methods and instruction.

In view of the fact that cooperation of the worker is required in achieving improvement through hygienic measures, a regular course in industrial hygiene is given by the department to the apprentices. During the past year a similar course was also given to foremen.

A paper entitled "Discussion of Public Health Bulletin No. 106, Comparison of an eight-hour plant and a ten-hour plant," by A. H. Ryan, was published in *Journal of Industrial Hygiene* (v. 2, p. 466-

478), April, 1921. An investigation of "Spoiled work in relation to hours of labor and other industrial conditions," made by A. H. Ryan and P. S. Florence, in conjunction with the United States Public Health Service, is in press.

Researches on the following subjects are in progress (September, 1921): Physiological analysis of occupation and its practical applications; the respiratory exchange in fatigue and work; eyestrain; fatigue; the absorption and elimination of zinc, cadmium, lead, and copper in brass foundry workers; the effect of long exposure to small quantities of carbon monoxide.

Graduate research is provided for in the plan as formulated, in order to develop properly trained research workers in industrial physiology, psychology, medicine, etc.; to stimulate interest in the industrial aspects of the biological sciences and to encourage research in these lines in the universities; and to keep the department staff in touch with the scientific spirit and viewpoint of the university laboratories. According to the plan contemplated, a graduate student in physiology, or psychology, for example, could spend one year in the factory in research upon his thesis, for which the university would give him credit. The factory would provide a fellowship stipend for such a student. The plan has been made effective at Yale University by the appointment of the director of this department as lecturer in industrial physiology; and at Tufts College, where the director of this department is head of the department of physiology in the medical school, through the establishment by the trustees of a research fellowship of \$600 for this purpose.

WILLIAM H. SINGER MEMORIAL RESEARCH LABORATORY.

Sandusky and Parkway, N. S., Pittsburgh, Pa. Samuel R. Haythorn, M. D., director.

Founded by Mrs. William H. Singer and construction of the building commenced April, 1915. On completion the entire property was turned over to the board of trustees of the Allegheny General Hospital to be used both as a research laboratory for the study of general medical and surgical problems and as a means of furnishing the hospital with a high grade of routine laboratory work.

The following studies by the director having a bearing on industrial hygiene have been published from this laboratory: "The prevention of epidemic influenza, with special reference to vaccine prophylaxis" (containing an analysis of the results on about 50,000 steel workers and railroad employees), which is included in the studies on epidemic influenza, published by the University of Pittsburgh School of Medicine in 1919; "Unresolved pneumonia associated with severe anthracosis" (in International Association of Medical Museums Bulletin No. 7, May, 1918); "The pathology of trinitrotoluene poisoning" (*ibid.*); "Experimental trinitrotoluene poisoning" (Journal of Industrial Hygiene, December, 1920, v. 2, No. 8, p. 298-318).

A description of the equipment of the laboratory is available in pamphlet form.

SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION.

Dean F. L. Bishop, University of Pittsburgh, secretary.

Organized at the close of the engineering congress held at Chicago in 1893, as an outgrowth of section E (engineering education) of

that congress. There are now over 1,500 members (annual dues, \$4). Annual meetings are held in the last week of June at a center of engineering education and at the invitation of a college or university. Three local sections have been organized since their authorization in 1919, viz: Pittsburgh, Georgia-Tech., Kansas-Nebraska.

The society publishes a bulletin, *Engineering Education*, monthly September to June, and the Proceedings of the annual meeting (v. 1-28, 1893-1920).

In 1907 the society formed with the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Chemical Society, a "Joint Committee on Engineering Education" which cooperated in a comprehensive investigation of the subject undertaken by the Carnegie Foundation for the Advancement of Teaching at its request. (See p. 93.)

A large part of the work of the society is conducted by 24 committees, half of this number being devoted to the separate subjects in the engineering curriculum. Their reports are presented at the annual meetings and printed in the proceedings.

COMMITTEE NO. 22 ON INTELLIGENCE TESTS.—L. L. Thurstone, Carnegie Institute of Technology, chairman. Appointed June, 1919, to determine the possible usefulness of intelligence tests and other objective tests for engineering students, as the result of papers and discussion on the subject at the Baltimore meeting in that year (Proceedings, v. 27, p. 113-158). The investigation is being carried on with the cooperation of 47 colleges, at which 10,000 freshmen were given six tests in 1920. The first report was published in the Proceedings of 1920 (v. 28, p. 349-361) and the committee has been continued so that the results of sophomore, junior, and senior scholarships may be used as criteria for determining the predictive value of the tests.

SOCIETY OF INDUSTRIAL ENGINEERS.

327 South La Salle Street, Chicago, Ill. George C. Dent, business manager.

Organized May, 1917, in Chicago at a conference of executives and engineers called by the Western Efficiency Society to discuss "the human factor in industrial preparedness." The activities of the society include stimulating original research, both in industrial plants and at universities; exchanging and coordinating knowledge of scientific methods of management. It has 345 members consisting of: Class 2, professional industrial engineers, whether consultants or executives; class 3, technical engineers and accountants, retained or resident; class 4, managing executives of commercial and industrial activities; class 5, investigators, teachers, writers and lecturers in engineering, economics, psychology and other subjects associated with management; class 6, juniors and students. Conventions are held semiannually, in the spring and fall at various places. Sectional meetings of industrial relations, educational, finance and accounting, production, and sales groups have been held at recent conventions. Local chapters in New York, Cleveland, Detroit, Chicago, Milwaukee, and in Texas hold monthly meetings.

Complete reports of the proceedings of conventions have been published as follows:

1918 (Chicago): Labor problems under war conditions. (Jointly with Western Efficiency Society.) 222 p.

1919, spring (New York): Industrial reconstruction problems. 200 p.

1919, fall (Cleveland): American and international labor conditions. 160 p.

1920, spring (Philadelphia): The practical applications of the principles of industrial engineering. 300 p.

1920, fall (Pittsburgh): Industrial education. 245 p. (Includes education of the professional industrial engineer, training the working force, education of the citizen in industry.)

1921, spring (Milwaukee): Industrial leadership. 1921. 375 p.

The main subject of the fall convention, October, 1921, at Springfield, Mass., was Industrial stability.

The series of Publications includes also addresses at local chapters, yearbooks and "A list of bibliographies of industrial engineering and management," prepared by the Committee on Research. The business manager's office issues a monthly bulletin, mainly chapter news.

RESEARCH COMMITTEE.—Edward J. Kunze, Pennsylvania State College, vice president in charge of research. Among the projects of this committee (organized 1919) is the promotion of original research, both in the industrial plant and in the university, to establish elemental standards of basic industrial exertion, such as shoveling, mixing, grinding, sawing, etc., and arrive if possible at a closer determination of what is a "fair day's work," and to make, arrange, and collect elemental time studies.

EDUCATIONAL COMMITTEE.—Dwight T. Farnham, St. Louis, Mo., vice president in charge of education. This committee was organized in March, 1920, and has been working on a standard course in industrial engineering and management for colleges.

COMMITTEE FOR THE ELIMINATION OF UNNECESSARY FATIGUE.—Frank B. Gilbreth, Montclair, N. J., chairman. The organization of this committee by the vice president in charge of research was authorized at the fall meeting, 1919. There are now about 85 members not restricted to the society. It has prepared exhibitions of devices and equipment designed to eliminate fatigue, and held sessions at the spring and fall conventions of 1921 on "Practical methods of fatigue elimination" and "White paint as a reducer of unnecessary fatigue," respectively.

SOUTHERN PINE ASSOCIATION.

New Orleans, La.

SAFETY DEPARTMENT.—W. Graham Cole, director of safety. This department was organized March 15, 1919, to assist the members of the association in the reduction of accidents among their employees and to collect and distribute information of value in this work. It has prepared and published a series of safety bulletins designed for posting and a booklet entitled, "Safety in the mill and woods" for distribution among workmen; also two safeguarding bulletins, safety suggestions on cards, and the annual report of its activities entitled, "Safeguarding the workman" have been published for the use of superintendents and foremen. The last named contains statistical charts of accidents in the Southern lumber industry.

The association is represented on the cooperating committee organized by the United States Bureau of Standards in formulating a National Safety Code for Logging and Sawmilling Operations.

SPRAGUE MEMORIAL INSTITUTE.

See under University of Chicago (p. 173).

STATE CHARITIES AID ASSOCIATION OF NEW YORK.

105 East Twenty-second Street, New York, N. Y.

COMMITTEE ON MENTAL HYGIENE.—Mrs. Margaret J. Powers, social service director. Organized in 1910 for the twofold purpose of conserving mental health and of securing high standards of care and treatment for those suffering from mental disorders and defects, this committee furnishes the psychiatric social service for the Department of Psychiatry, of Cornell Clinic, dealing with about 500 mental cases a year. A large number of these are referred to the Social Service Department for adjustment in all of their social relationships, and it is found that with many of them employment is the chief factor in their difficulty. The case records which have accumulated contain valuable data for research on difficulties in vocational adjustment. Illustrative material is given in a paper on "The industrial cost of the psychopathic employee," by Mrs. Powers, read before the Mental Hygiene Division of the National Conference of Social Work, April, 1920, and published in *Mental Hygiene* (v. 4, No. 4, October, 1920, p. 932-939).

STRUCTURAL SERVICE BUREAU.

Estey Building, Philadelphia, Pa.

This bureau has worked out the average number of days' employment which the Philadelphia bricklayer could normally expect in a year, and the number of days he would probably lose through unemployment, illness, and other causes beyond his control. The results were published in the *Monthly Labor Review* of the U. S. Bureau of Labor Statistics, v. 12, No. 5, May, 1921, p. 107-110. Similar figures which it has worked out for all the building trades in Philadelphia are given in the October, 1921, issue of the *Monthly Labor Review* (p. 98-100).

TANNERS' COUNCIL OF THE UNITED STATES OF AMERICA.

41 Park Row, New York, N. Y. Edward A. Brand, secretary.

INDUSTRIAL BUREAU.—This bureau was maintained by the council until the early part of 1921 when it was discontinued (Roy S. Bonsib, director). During 1919-20 it prepared and issued the following:

What tanners should know about anthrax; a compilation of general information on anthrax, its treatment, prevention, and elimination. By R. S. Bonsib. 1920. 24 p.

Healthgrams, Nos. 1-4, July-Nov., 1920 (a series of circulars upon the improvement of the health of tannery workers).

Safetygrams, Nos. 1-36, Aug., 1919-Nov., 1920 (a series of circulars on the prevention of accidents in tanneries).

A labor survey of the tanning industry, covering 70 plants, was made by the Bureau of Industrial Research (see p. 88) for the Tanners' Council, but the report has not been published.

TAYLOR SOCIETY.

29 West Thirty-ninth Street, New York, N. Y. H. S. Person, managing director.

Organized in 1911 as the Society to Promote the Science of Management; name changed in 1916 to honor the memory of Frederick W.

Taylor, pioneer in the development of science in management, who had died in 1915. The activities of the society were suspended during the war; it was reorganized in 1919, when permanent headquarters were established in New York and a managing director elected.

The object of the society is to promote the science and the art of administration and of management, for the mutual benefit of the community, labor, the manager, and the employer, and, among other things, to secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.

There are now about 450 members, mainly management engineers and industrial executives, classified in five grades: Honorary, senior (initiation fee \$15, annual dues \$15); associate (initiation fee \$15, annual dues \$15); junior, 21 to 30 years of age (initiation fee \$5, annual dues \$5); sustaining (annual dues \$100 to \$500). A Sales Executives' Section was established in 1920. Not less than two regular meetings are held each year, the annual meeting in November or December. The New York Section, organized in 1920, meets monthly on the third or fourth Thursday.

Papers and discussions at the meetings of the society and other contributions are published in the society's *Bulletin*, as follows:

Cost of living in relation to wage adjustments, a research made at the Holt Manufacturing Co., Peoria, Ill. (in v. 4, No. 5, p. 29-46).

Industrial relations symposium, Cambridge meeting October 4, 1919 (in v. 4, No. 6, p. 12-48).

Proceedings of the New York meeting, December 5, 6, 1919, on managerial problems (in v. 5, Nos. 1, 2), viz—"Standards," by W. K. Hathaway (p. 12-42); "The foreman," by S. E. Thompson (p. 43-48); "Labor turnover, a mathematical discussion," by C. G. Barth (p. 52-58); "Mutual rating, a contribution to the technique of participation," by H. W. Shelton (p. 59-67); "The need of better management in mining operations," by H. Archbald (p. 68-78).

Proceedings of the Rochester meeting, May 6-8, 1920 (in v. 5, Nos. 3, 4), which included papers on "The necessity for standards in the relation between illumination and output," by Ward Harrison (p. 113-119); "Can industrial democracy be efficient? The Rochester plan," by Meyer Jacobstein (p. 153-159); "The worker's reaction to scientific management," by W. R. Leiserson (p. 160-177).

"The three-shift system in the steel industry," by Horace B. Drury (in v. 6, No. 1), the results of an investigation under the Cabot fund (see p. 91) presented at the New York meeting December 3, 1920, with discussion thereon.

A symposium on "Stop-watch time study" (v. 6, No. 3), consisting of papers and discussion by F. B. and L. M. Gilbreth and others, before the New York and Philadelphia sections, December, 1920, and April, 1921.

The Cleveland meeting, May 19-21, 1921, included a sales executives' session devoted to methods of compensation of salesmen; a personnel administration session, consisting of papers and discussions on (a) performance ratings and bonuses for salaried employees, (b) unemployment scores; an industrial relations session, at which there was a symposium on joint action of employer and management in establishing standards, tasks, rates, and other standard conditions.

RESEARCH COMMITTEE.—Morris L. Cooke, 1109 Finance Building, Philadelphia, Pa., chairman. This committee was appointed October, 1919, to plan, arrange for, and supervise research in the field of administration and management carried on by subcommittees, individuals, and institutions, and to deliver the results of such research to the managing director as material for discussion at meetings, for publication in the *Bulletin* or as pamphlets or books, or to be filed

in the library of the society and thereby made available to the members; and also to coordinate experiments and investigations undertaken in this field by members and others.

The committee has persuaded the International Labor Office at Geneva to send out a questionnaire on the three-shift day in the steel industry; and it has done some work toward developing a method for measuring or establishing a quantitative method for studying unemployment.

COMMITTEE ON STANDARDS RELATING TO SCIENTIFIC MANAGEMENT.—H. K. Hathaway, 1109 Finance Building, Philadelphia, Pa., chairman. The purpose of this committee, appointed at the Rochester meeting May, 1920, is to formulate standards relating to scientific management for promulgation by the Taylor Society. The program of work to be undertaken was set forth in a paper by W. O. Lichtner, read at that meeting and published with discussion thereon in the *Bulletin of the Taylor Society* (v. 5, No. 4, August, 1920, p. 140-152). It includes promulgation of standards as to policy on bonus payments and policy on base rates and total earnings.

COMMITTEE ON SELECTION AND TRAINING OF SALESMEN.—Appointed at the request of a conference of sales executives, held under the auspices of the society June 25, 1920, has not yet published a report.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY., 532 Fifth Avenue, New York, N. Y. Thomas J. Keenani, secretary.

An association organized for the encouragement of original investigations and research work in mill engineering and the chemistry of paper, cellulose, and paper-making fibers generally; affiliated with the American Paper and Pulp Association.

VOCATIONAL EDUCATION COMMITTEE.—R. S. Kellogg, News Print Service Bureau, New York, secretary. This committee and the corresponding committee of the Technical Section of the Canadian Pulp and Paper Association have, through their joint executive committee, raised about \$30,000 in the United States and Canada which is being used in the preparation and publication of a course of instruction for employees of pulp and paper mills. A survey of several different typical plants, including an analysis of the principal pay-roll jobs, has been made for the joint executive committee by Mr. J. C. Wright, of the Federal Board of Vocational Education, for the purpose of determining the jobs or occupations for which specific vocational training can and should be given, the specific character of the instruction appropriate to each, the line of promotion, etc. The following pamphlet (reprinted from *Paper Trade Journal*) contains the results of this survey:

Vocational education in the pulp and paper industry: scope of vocational education, analyses of pay-roll jobs and synopsis of the textbooks. By J. C. Wright. New York, 1921. 71 p.

A series of textbooks for the course on the manufacture of pulp and paper is in preparation (J. N. Stephenson, editor) to be published by the McGraw-Hill Publishing Co. in five volumes and also in pamphlet form in sets corresponding to each volume. The first two volumes, containing preliminary subjects essential to a study of the technical matter in volumes 3-5, have been completed.

TOLEDO CONSUMERS' LEAGUE.

305 Bank of Commerce Building, Toledo, Ohio.

The results of a survey of "Toledo children who leave school for work," undertaken by the league in cooperation with the Toledo woman's committee of the Council of National Defense, was published in 1921 as No. 31 of its series of pamphlets (31 p.).

TRAINING SCHOOL AT VINELAND, N. J.

Vineland, N. J. E. R. Johnston, director.

An institution devoted to the interests of those whose minds have not developed normally (not a State institution, but the State of New Jersey sends some of its pupils here).

DEPARTMENT OF RESEARCH.—S. D. Porteus, director. Established in 1906, the general scope of the work of this department has been research on the problems of (1) the recognition, (2) the causation, and (3) the prevention of mental defect. The results of its studies are published as monographs in its Publications, Nos. 1-23, or as papers in *The Training School Bulletin*, issued monthly by the institution.

The work on the recognition of mental defect has involved the standardization of new tests and the modification and revision of existing series. The following publications contain material bearing on industrial competency and stability:

No. 16. Porteus tests—Vineland revision. By S. D. Porteus. 1919. 44 p. (These tests have a high correlation with industrial ability of individuals either just above or below the social efficiency level.)

No. 20. Intelligence and social valuations: a practical method for the diagnosis of mental deficiency and other forms of social inefficiency. By R. J. A. Berry and S. D. Porteus. 1920. 100 p.

No. 23. A study of personality of defectives with a social ratings scale. By S. D. Porteus. 1921. 24 p.

The department has also published translations of the writings of Binet and Simon (Publications, Nos. 11, 12) and a "Condensed guide to the Binet tests" (Publication No. 19; *Training School Bulletin*, v. 17, Nos. 1-2, March-April, 1920).

An industrial capacity scale, briefly noted in Publication No. 17 "A standardized information record" (p. 5), is being tried out and the results will shortly be published. This scale represents an attempt to give comparative numerical ratings to children engaged in different industrial occupations, which have been classified according to manual skill involved, judgment required, special knowledge such as the handling of machinery, and responsibility placed upon the worker to work without supervision and then each has been analyzed into ten steps of increasing difficulty, the basis of arrangement taking into consideration such factors as importance of the work, value of the material dealt with, personal risk to the worker, judgment and skill.

TRAVELERS INSURANCE CO.

Hartford, Conn.

ENGINEERING AND INSPECTION DIVISION.—John L. Thompson, superintendent. One of the primary duties of this division is to make recommendations on safety and accident prevention for all such risks as are insured by the company under compensation and

liability policies. It has accordingly prepared and issued the following publications dealing with safety matters:

Industrial standards, Elevators, Accident prevention in paper mills, The employee and accident prevention, Safety in moving-picture theaters, Accident prevention on the farm, Accident prevention in brick-making, Safety in building construction, Safety in the machine shop, Reciprocating engines and steam turbines, Grinding wheels, Boiler economy, Illumination in paper mills, Foremen and accident prevention, Organization of safety work in industrial plants, Motor vehicles and safety, Coal mining hazards, Boiler safety, Safe foundry practice, A treatise on safety engineering as applied to scaffolds.

TRAVELING ENGINEERS' ASSOCIATION.

W. O. Thompson (General offices, New York Central Railroad, Cleveland, Ohio), secretary.

This association has prepared the "Standard form for examination for firemen," (revised edition 1919), which is revised from time to time by its Committee on Revision of Progressive Examination for Firemen for Promotion and New Men for Employment.

EDWARD L. TRUDEAU FOUNDATION.

Saranac Lake, N. Y. Edward R. Baldwin, M. D., director.

An endowment inaugurated in December, 1916, as a memorial to the American pioneer in tuberculosis research whose name it bears and to continue the scientific investigations to which he had devoted his life. The fund now amounts to \$420,000 and the income is devoted to the following purposes:

1. To maintain laboratories and carry on research into the nature, causes and treatment of tuberculosis.
2. To maintain regular courses of instruction for physicians and others in the most advanced knowledge of the above subject, under the name of The Trudeau School of Tuberculosis.
3. To offer young physicians and others the opportunities for research work, while undergoing treatment for the disease, through the establishment of fellowships.

In addition to researches of more general application, such as those on infection (Etiological studies in tuberculosis, by L. Brown, S. A. Petroff and G. Pesquera, in *Am. Rev. Tuberculosis*, v. 3, No. 10, December, 1919), which have a direct bearing on industrial hygiene, experimental work in conjunction with the investigations of the Committee on Mortality from Tuberculosis in Dusty Trades of the National Tuberculosis Association has been carried on in the Saranac Laboratory under a Trudeau Foundation fellowship. The following is the first publication of results of these experiments:

Gardner, Leroy U. Studies on the relation of mineral dusts to tuberculosis. I. The relatively early lesions in experimental pneumokoniosis produced by granite inhalation and their influence on pulmonary tuberculosis. (*Am. Rev. Tuberculosis*, v. 4, No. 10, Dec., 1920.)

UNDERWRITERS' LABORATORIES.

207 East Ohio Street, Chicago, Ill. W. H. Merrill, president.

Established and maintained by the National Board of Fire Underwriters, for service—not profit; incorporated under the laws of the State of Illinois in November, 1901. The object of Underwriters' Laboratories is to bring to the user the best obtainable opinion on the merits of appliances, devices, machines, and materials in respect to life and fire hazards and accident prevention. Branch offices are located throughout the United States and Canada and in England.

The New York office (25 City Hall Place) is equipped for the conduct of examinations and tests of all electrical devices under the same conditions as those afforded at the principal office and testing station at Chicago.

Summaries of the Laboratories' reports are issued on printed cards filed according to classifications, and cabinets containing these cards are maintained at the offices of the principal boards of underwriters and inspection bureaus in the United States, at many of the general offices of insurance companies, by some insurance firms, certain Federal, State and municipal departments, and at the local offices of the Laboratories in large cities. Much of the information is also freely distributed by many of the following lists which are, as a rule, revised semiannually:

List of inspected mechanical appliances. July, 1920. 101 p.

List of inspected electrical appliances. Apr., 1920. 204 p.

— Supplement. Oct., 1920. 16 p.

List of appliances inspected for accident hazard. Oct., 1920. 24 p.

List of inspected automotive appliances. Apr., 1920. 20 p.

The results of the work in many classes of appliances are furnished directly to building owners, architects, users and other persons interested, by means of the Laboratories' label service, under which goods are inspected at factories by Laboratories' engineers and stamps or labels attached to such portion of the output as is found constructed in accordance with standard requirements.

Schedules of fees for examinations and tests and of charges for labels, as well as information regarding the three forms of supervision over goods marketed under the approvals, namely, the reexamination, inspection, and label services, and a list of the addresses of branch offices, are given in the following pamphlet, obtainable on application:

The organization, purpose, and methods of Underwriters' Laboratories. 1917. 45 p.

Underwriters' Laboratories is one of the cooperating organizations which constitute the Electrical Safety Conference (see p. 100) and is represented in the Fire Protection Group of the American Engineering Standards Committee (see p. 72).

UNITED ENGINEERING SOCIETY.

See Engineering Foundation (p. 102).

UNITED TYPOTHETÆ OF AMERICA.

608 South Dearborn Street, Chicago, Ill.

An international association of master printers organized in two divisions, viz: The Closed Shop Branch and the Open Shop Branch, each having complete autonomy in labor matters and full control of its own finances. Each branch appoints three members of its board of governors to the Industrial Relations Committee of the association, created to enable the Open Shop and Closed Shop branches to co-operate, if they so desire, in labor matters of mutual interest.

The Closed Shop Branch joined with two other employers' organizations, namely, the Printers' League of America and the International Association of Employing Stereotypers and Electrotypers, and the four international unions to establish in April, 1919, "The Inter-

national Joint Conference Council" ²⁵ to investigate and legislate upon matters of labor policy in the commercial and periodical branches of the printing industry.

DEPARTMENT OF INDUSTRIAL RELATIONS.—F. A. Silcox, director. Established in 1919 "to provide within the printing industry centralized investigation, coordination, analysis, interpretation, and distribution of information on the problem of industrial relations between employer and employee which will eventually lay the foundation for the formulation of broad, constructive policies leading to greater uniformity in wages and existing conditions, and to the elimination of strikes through voluntary conciliation and arbitration." Its annual reports are published in the convention numbers of the *Typothetæ Bulletin* (e. g., December, 1919, October, 1920). Expenditures of the department during the year 1919-20 amounted to approximately \$30,000.

Labor statistics questionnaires sent by this department to all members of the United Typothetæ of America have enabled it to make an analysis of the labor policy followed in the shop of each member, the number of employees at work in the mechanical department, and the number of apprentices employed in relation to total employees.

Data regarding plans for training apprentices, which are being tried out in different parts of the country, have been collected and published in a series of four articles by Francis H. Bird, assistant director, in *Typothetæ Bulletin*, April-July, 1920.

A survey of profit-sharing and bonuses in Chicago printing plants has recently been made by F. E. Wolfe, of the research staff of the department, and the results were published in the *Journal of Political Economy*, July, 1921 (p. 521-542); two reports from this investigation, which covered 138 establishments, have appeared in *Typothetæ Bulletin*, December, 1920 (p. 18-23), and February, 1921 (p. 5-7). A brief report on "group life insurance in Chicago printing plants," by F. E. Wolfe, was published in *Typothetæ Bulletin*, January, 1921 (p. 6-7).

In cooperation with the National Industrial Conference Board a contractual relations survey has been undertaken by questionnaires sent out to 1,000 members seeking information on their experience with agreements with labor organizations. Contracts with different unions in various cities have been analyzed and arranged in comparative form for use of scale committees.

Other material prepared by the department includes articles and charts on changes in cost of living and printers' wages (in various numbers of *Typothetæ Bulletin*); wage scales (with emergency bonuses) compiled from reports of local *Typothetæ* secretaries (published monthly as supplements to *Typothetæ Bulletin*); a pamphlet entitled "Helpful hints for dealing with the wage problem;" memoranda on shop committees and other special topics.

COMMITTEE ON EDUCATION.—Henry P. Porter, chairman; Frederick W. Hamilton, education director (office at 2 Park Square, Boston, Mass.). This committee has made a study of the teaching of

²⁵ An account of the formation and subsequent activities of this council is given in an article by C. R. Walker, jr., *Monthly Labor Review* of the U. S. Bureau of Labor Statistics, v. 12, No. 1, January, 1921, p. 23-44; also reprinted separately by the Bureau of Industrial Research, New York.

printing which has been introduced widely in public schools and has embodied its findings and recommendations in a pamphlet published in 1919 under the title "Instruction in printing in public schools" (34 p.). This contains also a list of 64 textbooks in the "Typographic technical series for apprentices" (or U. T. A. Typographic Library) prepared under the supervision of the committee for use in grade classes in courses of printing instruction, and by individuals; about half of these have been published to date.

Standard cost finding, accounting, estimating and salesmanship courses, for printers, have been in operation by correspondence for several years.

The United Typothetae of America School of Printing, 1500 East Michigan Street, Indianapolis, Ind., was established by the association in 1904.

Further information regarding educational activities is given in reports made to the 1920 convention (Typothetae Bulletin, v. 14, No. 2, Oct., 1920, p. 47-91).

VOCATIONAL EDUCATION ASSOCIATION OF THE MIDDLE WEST.

L. W. Wahlstrom, 1711 Estes Avenue, Chicago, secretary.

Organized in 1914 "to study problems relating to vocational education and to bring the results of this study to public attention for the purpose of fostering types of education that will meet the vocational needs of youth and the reasonable demands of industry for efficient workers, while preserving those elements of general education necessary for good citizenship in a democracy." Its present membership is about 650 (annual dues, \$1 a year). Meetings are held annually, in January or February.

The association has published the Proceedings of the second and third annual conventions (1916, 1917). In 1916 separate sessions were devoted to "Work for women" and "School and employment;" in 1917, to "Work for women" and "Vocational education from the standpoint of organized labor." In 1920 a joint convention was held at Chicago with the National Society for Vocational Education (see p. 135) and the proceedings published in its Bulletin No. 32.

At the Minneapolis convention, February, 1921, the following special committees presented reports at sectional meetings: Industrial education (on standards in part-time education); Commercial education; Vocational guidance (on the applications of psychology to problems of vocational guidance). The vocational guidance programs were carried out in cooperation with the Vocational Guidance Association of Minneapolis.

VOCATIONAL GUIDANCE AND EMPLOYMENT SERVICE FOR JUNIORS.

17 Lexington Avenue, New York, N. Y. Mrs. Alice K. Pollitzer, director.

In connection with the work of this service psychological tests are being applied to classes and groups of students in the New York City schools. Results of application of the Otis intelligence test and the correlations between Regents' marks, as well as teachers' ratings, and I. Q. are available for certain dressmaking and industrial art classes.

In the fall of 1920 psychological tests were given by Dr. Ruth Clark, of this service, in the West Side Continuation School, which provides instruction for employed children for four hours a week, and the results have been used as an aid in arranging their classwork to fit their individual needs and for the guidance of the placement secretaries when interviewing applicants for employment.

WESTERN EFFICIENCY SOCIETY.

327 South La Salle Street, Chicago, Ill.

Organized December, 1912, and incorporated under the laws of Illinois February, 1913, for the promotion of efficiency in commercial, financial, public service, and industrial enterprises.

In May, 1917, under the auspices of this society was held a national conference on "The human factor in industrial preparedness," at which the Society of Industrial Engineers was organized. The report of its proceedings (212 p.) consists of papers on personnel questions.

In March, 1918, a national conference on "Labor problems under war conditions" was held under the joint auspices of the Society of Industrial Engineers and the Western Efficiency Society. The proceedings of this conference (222 p.) include "Women in industry," by C. E. Knoepfel, based on answers to 1,000 questionnaires (p. 28-72; also issued by the author's firm with additional material as a monograph, 123 p.)

The society is organized in functional management sections, each of which meets twice a month or oftener. Papers read at the meetings have been published up to August 30, 1920, in the society's Bulletin (v. 1-4, Nos. 1-76), which has been superseded by *Business Crucible*, published monthly from November, 1920.

PERSONNEL AND EMPLOYMENT MANAGEMENT SECTION.—This group published in July, 1918, "A questionnaire digest on methods of wage payment" (52 p.).

WOMAN'S OCCUPATIONAL BUREAU.

216 Meyers Arcade, Minneapolis, Minn. Margaret A. Smith, manager.

In 1919 the Vocational Informational Service of this bureau published Occupational Bulletins Nos. 1, 2, viz:

No. 1. Women in banking in the city of Minneapolis. 23 p.

No. 2. War-time replacement in the city of Minneapolis. 19 p.

The tables in the latter were compiled from data collected in the Industrial Survey of Women employed outside the home made by the Women in Industry Committee of the Women's Division, Minnesota Commission of Public Safety and the Bureau of Women and Children, State Department of Labor and Industries with the co-operation of this bureau.

The bureau has also published the results of three short studies on "Home economics positions in Minneapolis," "The field of social service," and "Opportunities for women in journalism."

WOMEN'S EDUCATIONAL AND INDUSTRIAL UNION.

264 Boylston Street, Boston, Mass.

Organized 1877 and incorporated 1880, to promote the educational, industrial, and social advancement of women.

DEPARTMENT OF RESEARCH.—Miss Lucile Eaves, director. The results of investigations made by this department and published 1910–1921, mainly by other agencies, have been issued in a series entitled “Studies in economic relations of women” (v. 1–11). They include studies of dressmaking (v. 4), millinery (v. 5), and the boot and shoe industry (v. 6) as trades for women; industrial home work in Massachusetts (v. 7); the public schools and women in office service (v. 8); industrial experience of trade-school girls in Massachusetts (v. 9); the food of working women in Boston (v. 10); old-age support of women teachers (v. 11). Of these, volumes 4, 6, 9, were published by United States Bureau of Labor Statistics as its Bulletins Nos. 193, 180, 215; volume 7 by Massachusetts Bureau of Statistics as Labor Bulletin 101; volume 8 by Boston School Committee; and volume 10 by Massachusetts Department of Health. “Women professional workers,” a study made for the Union by Elizabeth Kemper Adams, and published in 1921 by the Macmillan Co., New York, largely supersedes volume 1 of the above series, “Vocations for the trained woman.”

During 1917–18 a study of the vocational experience of juvenile employees in Boston was made. A report of the investigations in retail departments, dry goods and clothing stores was published in 1920 under the title “Training for store service” (143 p.). A list of the unpublished statistical material tabulated by the department while making this study in retail stores is given on pages 127–132 of the report. Investigators wishing to compare this unpublished data with similar data collected in other cities may obtain any of the tables in the list by paying the cost of copying and mailing. Similar studies of the experiences of young persons in confectionery works, printing offices, grocery stores, and hotels have been completed, but are not yet published. Another unpublished study relates to 1,000 cases of illiterate foreign born (how employed, relative earnings, and chance of promotion).

Investigations in progress during the current year deal with the subject “Methods by which self-supporting women may provide for their old age.” The report is to form volume 12 of the above series.

Three fellowships in social-economic research carrying a stipend of \$500 are awarded annually to women who are college graduates trained in economics or sociology. They are given a year’s training in the department on schedules, field work, construction and interpretation of statistical tables, and the literary presentation of results and carry out a cooperative investigation of the subject selected for the year’s work. This fulfills the requirements for the degree of M. S. in research at Simmons College (see p. 193), with which the department is affiliated.

WORKERS’ HEALTH BUREAU.

Saint Denis Offices, Broadway and Eleventh Street, New York, N. Y. Grace M. Burnham, Harriet Silverman, directors.

Incorporated in 1921, this organization is devoted to planning, installing, and supervising health service for trade-unions. The work which it is organized to do is defined as follows:

1. To conduct a scientific industrial study of the health needs of any trade-union.
2. To recommend a complete health program for that trade-union based on such a study.

3. To recommend an educational program completely covering the subject of workers' health.

4. To establish health departments within trade-union locals, such departments to specialize in preventive work, including thorough medical and dental examinations.

5. To train workers' health committees to carry out the health program in the workshop.

6. To select with scrupulous care, trained doctors, nurses, and teachers required in conducting the union health work.

WORKMEN'S CIRCLE.

175 East Broadway, New York, N. Y. George Rubin, statistician.

A fraternal organization with about 82,000 members and 642 branches distributed throughout the United States and Canada.

A statistical review of disability based upon an analysis of its records has been completed recently and published in *Modern Medicine* (v. 2, No. 11, November, 1920, p. 730-733).

YOUNG WOMAN'S CHRISTIAN ASSOCIATION, NEW YORK CITY, CENTRAL BRANCH.

610 Lexington Avenue, New York, N. Y.

In 1919-20 the Employment Department of this branch and the Industrial Department of the War Work Council of the National Board, Young Woman's Christian Association made a factory survey of opportunities for executive and technical women, covering 250 shops in the Greater New York industrial district and the New Jersey factory belt which employed 200 or more women. The report prepared by Janet R. Huntington, in charge of survey, was published in 1920 under the title "Executive and technical women in factories" (19 p.).

(b) UNIVERSITIES AND COLLEGES.

MUNICIPAL UNIVERSITY OF AKRON.

Akron, Ohio.

COLLEGE OF ENGINEERING.—Fred E. Ayer, dean. Established in 1914, this college has a five-year cooperative engineering course, patterned after the "Cincinnati plan," in which the students are grouped in two sections, one of which is at work in local engineering shops (at a minimum wage of 30 cents per hour) and the other in attendance at the university, and these sections change places every two weeks. The shop work and the university work are coordinated by technically trained men experienced in engineering practice.

A cooperative course in municipal engineering has been arranged in which the students work half time in the different engineering departments of the city of Akron.

Three of the large rubber companies in Akron have united in establishing about 30 industrial scholarships for the purpose of training men by the cooperative plan in manufacturing production. The company pays the university tuition and fees of the student and employs him at the rate of \$75 per month during his alternate two-week periods in the production department of the factory, the work being carefully arranged so that he will spend some time in every department of the plant. The length of this course is four years of eleven months each.

BOSTON UNIVERSITY.

525 Boylston Street, Boston, Mass.

Vocational guidance 3, one of the late afternoon courses for teachers and other special students, is a research course in this field conducted by Frederick J. Allen, of the Bureau of Vocational Guidance, Harvard University. Each member of the class carries on individual research into a special problem, such as the study of methods in establishing a vocational bureau in a community or school system, an occupational, educational or social survey, or the extended study of a particular business or industry.

COLLEGE OF BUSINESS ADMINISTRATION.—A course on employment management practice (B-55, 56), two hours each week throughout the year, is given in the evening division by Mr. Ralph G. Wells, and special lecturers. It was inaugurated by the Employment Managers' Association, Boston.

BROWN UNIVERSITY.

Providence, R. I.

SCHOOL OF EDUCATION.—Stephen S. Colvin, director. A series of group intelligence tests, designated the Brown University tests, has been compiled by the director. It includes two completion tests, two vocabulary tests, two opposite tests, two analogies tests, one facts-and-conclusions test, and one arithmetic test. The results obtained in the administration of these tests are given in the following articles by Prof. Colvin:

Psychological tests at Brown University. (*School and Society*, v. 10, No. 236, July 5, 1919, p. 27-30.)

The validity of psychological tests for college entrance. (*Educational Rev.*, v. 60, No. 1, June, 1920, p. 7-17.)

Educational guidance and tests in college. (Shortly to appear in *Journal of Applied Psychology*.)

The use of intelligence tests in Brown University. (Shortly to appear in *Educational Review*.)

BRYN MAWR COLLEGE.

Bryn Mawr, Pa.

CAROLA WOERISHOFFER GRADUATE DEPARTMENT OF SOCIAL ECONOMY AND SOCIAL RESEARCH.—Dr. Susan M. Kingsbury, director. Established in 1915 as a graduate school to prepare students for professional service dealing with industrial and social relations. In 1918, with the support and cooperation of the National War Council of the Young Women's Christian Association, courses in industrial supervision and employment management were introduced to meet the demands of industry for trained women to fill positions as supervisors of women's work, employment managers, etc. This division has now been made permanent, as the Grace H. Dodge Foundation, through a fund of \$100,000 recently given to Bryn Mawr College by Mr. John D. Rockefeller, jr., for the endowment of instruction in industrial relations in this department, and additional endowment is being raised to provide scholarships and fellowships.

The instruction in industrial supervision and personnel administration is given by Miss Gladys Boone and includes a graduate course dealing with the problems and technique of personnel administration and three seminars in labor organization, research in labor problems, and social economy applied to industrial supervision and personnel administration, respectively (each two hours a week through-

out the year). The last-named seminar includes a practicum of 7 or 12 hours' field work per week in industrial experience in or near Philadelphia during the college year, and two months of nonresident work in an industrial or mercantile establishment during the following summer, under the supervision of the instructor. The firms which have cooperated in giving experience to students either in the employment office or in the factory are listed in the announcements of the department and the college calendar of graduate courses 1921, which also give information regarding scholarships and fellowships available for students in this group.

The seminar in social and industrial research, offered by the director, is devoted to training in field investigations and the analysis and interpretation of data secured.

Among the subjects of seminar researches recently made are the following: Analysis of labor turnover for some large industrial concerns; substitution of women for men on the Pennsylvania railroad; mothers in industry in Philadelphia; women who manufacture in their homes for industry (in cooperation with the State Department of Labor and Industry).

PSYCHOLOGICAL LABORATORY.—Prof. C. E. Ferree, director. The principal researches of this laboratory in the field of industrial psychology have been in special physiological and sensory tests for vocational selection and in the study of hygienic conditions of work, particularly as regards the question of illumination. Studies have been made by Prof. Ferree and Dr. Gertrude Rand on the effect of intensity, distribution, and color of light on ocular functions, individual differences in speed of discrimination of the eye, power to sustain clear seeing, and power to see at low illuminations. The lighting studies were made under the auspices of the American Medical Association's Subcommittee on the Hygiene of the Eye. The work on the speed of changes in accommodation of the eye for different distances was used in the selection of aviators and in checking up their daily condition both at Mineola and in France; the investigation on acuity at low illuminations was made in conjunction with the Navy Medical Service primarily for the use of the Navy in the selection of men for lookout service. The results of these researches have been published in the following papers:

Ferree, C. E. Tests for the efficiency of the eye under different systems of illumination and a preliminary study of the causes of discomfort. (*Trans. Illum. Eng. Soc.*, 1913, v. 8, p. 40-60.)

— The efficiency of the eye under different systems of lighting. (*Internat. Cong. on School Hygiene*, 4th, Buffalo, 1913, v. 5, p. 351-364; *Ophthalmology*, July, 1914, p. 1-16; *Mind and Body*, 1913, v. 20, p. 280-286, 345-353.)

— The problem of lighting in relation to the efficiency of the eye. (*Science*, July 17, 1914, N. S., v. 15, p. 84-91.)

Ferree, C. E. and Rand, G. The efficiency of the eye under different conditions of lighting: the effect of varying distribution and intensity. (*Trans. Illum. Eng. Soc.*, July, 1915, v. 10, p. 407-447.)

— Further experiments on the efficiency of the eye under different conditions of lighting. (*Trans. Illum. Eng. Soc.*, July, 1915, v. 10, p. 449-501.)

— Some experiments on the eye with inverted reflectors of different densities. (*Trans. Illum. Eng. Soc.*, 1915, v. 10, p. 1097-1133.)

— A résumé of experiments on the problem of lighting in its relation to the eye. (*Jour. Philos. Psychol. and Sci. Methods*, 1915, v. 12, p. 657-663.)

— Some experiments on the eye with pendant reflectors of different densities. (*Trans. Illum. Eng. Soc.*, 1916, v. 11, p. 1111-1137.)

— Miscellaneous experiments on the efficiency of the eye under different conditions of lighting. (*Ophthalmology*, July, 1916, p. 1-25.)

Ferree, C. E., and Rand, G. A résumé of experiments on the effect of different conditions of lighting on the eye. (*Annals of Ophthalmology*, July, 1916, p. 1-10.)

— The power of the eye to sustain clear seeing under different conditions of lighting. (*Jour. Educ. Psychol.*, 1917, v. 8, p. 451-468.)

— Some experiments on the eye with pendant opaque reflectors differing in lining, dimensions, and design. (*Trans. Illum. Eng. Soc.*, 1917, v. 12, p. 464-487.)

— Some experiments on the eye with different illuminants, parts I-II. (*Trans. Illum. Eng. Soc.*, 1918, v. 13, p. 50-60; 1919, v. 14, p. 107-132.)

— Lighting in its relation to the eye. (*Proc. Amer. Philos. Soc.*, 1918, v. 57, No. 5, p. 440-478.)

— The inertia of adjustment of the eye for clear seeing at different distances; a study of ocular functions with special reference to aviation. (*Trans. Amer. Ophthalmological Soc.*, 1918, v. 16, p. 142-166; *Amer. Jour. of Ophthalmology*, 1918, v. 1, p. 764-776.)

— The speed of adjustment of the eye for clear seeing at different distances. (*Amer. Jour. Psychol.*, 1919, v. 30, p. 40-61.)

— Lantern and apparatus for testing the light sense and for determining acuity at low illuminations. (*Amer. Jour. of Ophthalmology*, v. 3, No. 5, May, 1920.)

— Visual acuity at low illumination and the use of the illumination scale for the detection of small errors in refraction. (*Amer. Jour. of Ophthalmology*, v. 3, No. 6, June, 1920.)

— An apparatus for testing the light and the color sense. (*Amer. Jour. of Ophthalmology*, v. 3, No. 11, Nov., 1920.)

— The effect of variations in intensity of illumination on functions of importance to the working eye. (*Trans. Illum. Eng. Soc.*, Dec., 1920, v. 15, No. 9, p. 769-801.)

A study of the ideal reading page as to coloration, finish and type is being made with the American Writing Paper Co., of Holyoke.

In the seminar and laboratory course in applied psychology intelligence testing is taught from the point of view of the application of tests in employment and placement and the procedure in devising tests for such purposes, and research work is done in connection with vocational guidance bureaus.

UNIVERSITY OF CALIFORNIA.

Berkeley, Calif.

DEPARTMENT OF HYGIENE.—Robert T. Legge, M. D., professor of hygiene. In this department an investigation is being made by Dr. John Force into the cause of "packer's itch," a dermatitis found among packers using infested straw. Another type of occupational dermatosis, which is being investigated by Dr. Legge, is that of a peculiar infection of the fingers of dried fig packers. Problems of industrial nursing are being studied by Miss Edith S. Bryan, professor of public health nursing.

A syllabus of the lecture course in industrial hygiene given in this department for the past six years is published in *United States Public Health Reports* (v. 35, No. 15, April 9, 1920, p. 891-893).

DIVISION OF VOCATIONAL EDUCATION.—R. J. Leonard, director. Established in 1919 for the purpose of unifying the various activities in this field carried on in connection with the University at Berkeley and its southern branch at Los Angeles. Among the special research projects recently completed or in progress by graduate students in seminary are the following: Studies in occupational extension; Attitude of organized labor toward vocational education; Analysis of the chemical industries of the East Bay Region for purposes of vocational education; Study of the garment-making industries in San Francisco; Mathematical and scientific work related to the machine

shop trades; How large employers select personnel; The function of vocational guidance and placement in part-time and evening schools; Study of juvenile employment in Long Beach; Industrial education in the junior high school; Vocational opportunities for girls of high school age in Oakland.

RESEARCH AND SERVICE CENTER FOR PART-TIME EDUCATION.—Miss Emily G. Palmer, director. Established in 1920 under the above division, it is confining its efforts at present to the analysis of occupations as a means of assisting continuation school teachers. It will take up from time to time those matters which are of greatest importance in furthering the scheme of State aid in vocational education. It has issued the following:

Bulletin No. 1. Syllabus of an introductory course on part-time education. (Out of print.)

Leaflet No. 1. Part-time education series No. 1. A first reading list for administrators and teachers in part-time schools.

Leaflet No. 2. Part-time education series No. 2. The work of coordination in part-time education. (Out of print.)

Bulletin No. 2. Part-time education series No. 3. An analysis of department-store occupations for juniors.

Bulletin No. 3. Part-time education series No. 4. Coordination in part-time education.

Bulletin No. 4. Part-time education series No. 5. An analysis of the work of juniors in banks.

Part-time news notes: No. 1, Three months of coordination in the Oakland schools; No. 2, Progress in part-time education in Los Angeles; No. 3, The work of the director of part-time education; No. 4, The application blank for enrollment in part-time schools: a statistical study, by E. G. Palmer; No. 5, Junior employees in the retail drug business, by H. A. Campion.

CARNEGIE INSTITUTE OF TECHNOLOGY.

Schenley Park, Pittsburgh, Pa.

DIVISION OF COOPERATIVE RESEARCH.—W. V. Bingham, director. This division was organized in 1921 to encourage research in both pure and applied science, including the scientific aspects of human relations in industry, and particularly to place the facilities of the institute at the disposal of large industrial and commercial concerns, or associations, desiring to have systematic research carried out on specific problems. It includes the Bureau of Personnel Research and the Research Bureau for Retail Training, which were previously departments of the Division of Applied Psychology (superseded by this new division). Additional departments are now in process of organization, viz: Bureau of Educational Research, under the immediate supervision of Dr. E. K. Strong, jr.; Bureau of Science and Engineering Research, headed by Prof. A. J. Wurts.

BUREAU OF PERSONNEL RESEARCH.—C. S. Yoakum, director. This bureau was organized in May, 1916, as the Bureau of Salesmanship Research. During the war its officers and research assistants were taken over by the General Staff to develop and administer the personnel system of the army.²⁶ After the return of the staff from war, the scope of the bureau was enlarged to include selection and development of clerical workers and executives, as well as salesmen, and the present name was adopted in June, 1919.

The bureau is a joint enterprise maintained by groups of cooperating manufacturing and commercial concerns, through which they

²⁶ The Committee on Classification of Personnel in the Army was headed by Walter Dill Scott and W. V. Bingham of the bureau staff.

pool their experience, exchange information, and initiate investigations of problems of common interest relating to employment, selection, training, organization, and supervision of personnel. The institute maintains the general research staff and laboratories; and subscriptions are received from cooperating firms in aid of pure research in personnel problems. An important portion of the support of the bureau comes from its applied research on personnel problems arising in the office, sales, or executive organization of individual firms, for which a minimum annual fee of \$500 is asked. In addition to this annual retainer, a firm may arrange for special research, fellowships, or the assignment of an assistant to work on its problems. Groups of firms may be organized for special research, in which case the fees are determined by group agreement. Service work to business concerns through the bureau's staff is supported as a separate function under agreements with the firms for which it is performed, those now in force ranging in payments from \$100 to \$1,000 monthly.

The researches carried on by the Bureau of Salesmanship Research during the three years 1916 to 1919 fall into two groups:

(a) Methods of selecting salesmen, including preparation and issuance of the volume, "Aids in selecting salesmen, series of 1916," containing application, interviewer's and test blanks (28 p.); development of norms and standards of comparison for use in evaluating a salesman's performance in the tests; statistical studies of sources of successful salesmen.

(b) Methods of developing salesmen, including studies of types or sales schools; studies of sales conventions, summarized in its Bulletin No. 21, issued in 1919, entitled "Sales conventions" (26 p.); studies of methods of supervision, stimulation through house organs and bulletins, and compensation as affecting the salesman's productivity.

A summary of the available results of the previous work of the bureau was published in 1920 under the title "Research in sales personnel" (60 p.); and the work done during 1919-20 on job specifications relating to clerical personnel was issued as "Aids for selection and placement of clerical personnel" (130 p.).

In February, 1920, the bureau began sending out a series of mimeographed reports covering the topics being studied, as follows:

Report A, 1920. First-year production as a measure of future success in selling.

Report B, 1920. A preliminary study of clerical workers.

Report C, 1920. Methods of measuring sales possibilities.

Report D, 1920. Outlines of personnel administration: (1) Personnel department—organization and employment process; (2) Cost of living in relation to wage adjustment; (3) Use and development of sources of supply; (4) Labor turnover; (5) Education and training; (6) Foreman training; (7) Health supervision; (8) Methods of compensation; (9) Organization studies; (10) Follow-up work; (11) Recreation, welfare, and social work; (12) Employees' associations and organization.

Report E, 1920. Building a marketing organization.

Report F, 1920. Questions and answers on supervision of salesmen.

Report H, 1920. Some uses of job analyses: Pt. 1, The zoning of jobs—an effective solution of some personnel problems; Pt. 2, The zoning of jobs and determining a fair wage.

Also special reports, based on data from cooperating firms, dealing with special topics in selection, training, measures of success, supervision, and organization.

Other papers, and the discussion thereon, are printed in the proceedings of the first fall meeting (November 14, 1919) and the fourth annual meeting (May 27, 1920) of the board of cooperating members of the bureau.

RESEARCH BUREAU FOR RETAIL TRAINING.—W. W. Charters, director. Established in 1917, because certain of the firms in the original Bureau of Salesmanship Research (v. supra) wished to develop the training and educational work more rapidly, this bureau aims (1) to provide a limited group of able people with technical training for leadership in the employment and educational departments of general stores; (2) to train teachers for high-school courses in selling; (3) to conduct research bearing on the human factor in stores: the selection, placement, and individual development of employees; (4) to cooperate with the public schools in arranging part-time courses which combine schooling with experience in stores.

The institute contributes the services of its faculty and provides rooms, office force and overhead expenses in addition to substantial support of the training course. Seven Pittsburgh stores in 1918 underwrote \$32,000 a year for five years for the support of the bureau.

The bureau has successfully solved many problems in retail selling and has developed a technique in training that can be applied generally. Some of the results of its studies are issued in three series of bulletins, as follows:

Bulletin (general series): No. 1. Merchandise manual for shoe departments. By Elizabeth Dyer. 1921. No. 2. The retail-selling course in Pittsburgh high schools. By J. B. Miner. 1921.

Elementary series: No. 1. Shoes—merchandise information for salespeople. By Elizabeth Dyer. 1920.

Instruction series: No. 1. Shoes—teaching instructions for training new salespeople. By Elizabeth Dyer. 1920.

The training course for personnel work in the retail field, covering department-store administration, training, employment management, applied psychology (including mental-test technique), and research, and fellowships offered, are described in a special bulletin of the Carnegie Institute of Technology.

BUREAU OF EDUCATIONAL RESEARCH.—E. K. Strong, jr., director. This bureau, established in 1921, will concern itself chiefly with educational problems arising within the institute, but also has an interest in problems of education in industry. Research work in this field was previously carried on under the direction of Dr. Strong in connection with the Vocational Education Department. During 1920-21 job analyses of the duties of executives in the three fields of commercial printing, building construction, and the metal-working industries were made. The information obtained in this survey has thus far been utilized only for the reorganization of the courses of instruction in the College of Industries of the institute intended for training men to become executives in these industries. Certain aspects of the work were dealt with in two papers by the director, namely:

Analyzing industrial requirements. (Proceedings of the Society of Industrial Engineers, Nov., 1920, p. 75-82.)

Job analysis of the manager in industry. (School and Society, v. 13, p. 456-462, Apr. 16, 1921.)

DEPARTMENT OF PSYCHOLOGY.—L. L. Thurstone, professor of psychology. This department of the former Division of Applied

Psychology has been transferred to the Division of General Studies, but it remains in close affiliation with the Division of Cooperative Research. It gives instruction in pure and applied psychology, statistical methods, personnel administration, etc., and conducts the group tests given to all students entering the institute.

Tests developed and published by this department include: Proficiency test for typists; clerical examination; a series of six tests for college freshmen and high-school seniors prepared for the Society for the Promotion of Engineering Education (see p. 153); personnel aids (series of 1918). The following articles on tests have been published in psychological journals:

Mental tests for prospective telegraphers, a study of the diagnostic value of mental tests for predicting ability to learn telegraphy, by L. L. Thurstone. (*Jour. App. Psychol.*, v. 3, No. 2, June, 1919, p. 110-117.)

A standardized test for office clerks, by L. L. Thurstone. (*Jour. App. Psychol.*, v. 3, No. 3, Sept., 1919, p. 248-251.)

UNIVERSITY OF CHICAGO.

Chicago, Ill.

SCHOOL OF COMMERCE AND ADMINISTRATION.—L. C. Marshall, dean, In addition to courses of a more general character, the program of work in preparation for personnel administration includes the following dealing specifically with personnel problems:

Political economy 43: The business manager's administration of labor (Asst. Prof. Paul H. Douglas), dealing with (1) the factors making for ineffective work, such as labor turnover, absenteeism, withheld effort, personal incapacities of health and training, disharmonies of relationship between management and the workers; (2) methods of securing effective effort, such as the proper administration of the labor supply and the selection of workers, promotion, demotion, transfer, and discharge, regularization of employment, education and training, safety and health, welfare work, hours of labor, wages and rewards, joint relations with employees, whether through shop committees, unions, or industrial councils; (3) the organization and functions of a personnel department and its place in a business organization. Investigations are assigned on special topics and the student is expected to do field work upon some phase of employment problems.

Political economy 44: The education and training of the worker; a study of the various kinds of ability needed in modern industry and a consideration of the training agencies set up (1) outside the industrial establishment, such as trade schools, supplementary training courses, cooperative schools and continuation schools; (2) inside the establishment, such as the training department, vestibule schools, apprentice schools, "formanizing" classes, etc. Provision will be made for those who wish definite training in trade teaching by means of supervised field work, etc.

An article by Dean Marshall on "Incentive and output: a statement of the place of the personnel manager in modern industry" appeared in *Journal of Political Economy* (v. 28, No. 9, November, 1920, p. 713-734). A guide and bibliography for labor managers, by Prof. L. S. Lyon, was published in *Industrial Management* for November, 1920. Prof. Douglas published in 1921 a monograph on "American apprenticeship and industrial education" (348 p.), in *Columbia University, Studies in history, economics, and public law* (v. 95,

No. 2; whole No. 216); and an article on "Shop committees: a substitute for or supplement to trade-unions" (*Jour. Pol. Econ.*, Feb., 1921, p. 89-107). He has in preparation a study of "The relationship between turnover and absenteeism."

OTHO S. A. SPRAGUE MEMORIAL INSTITUTE.

University of Chicago, Chicago, Ill. H. Gideon Wells, M. D., director of medical research.

Organized January, 1911, under a bequest from Otho S. A. Sprague for the purpose of the relief of human suffering (present fund, \$1,500,000; annually available, \$80,000) and incorporated under the laws of the State of Illinois; affiliated with the Medical School of the University of Chicago by vote of its trustees on November 17, 1916.

The chief emphasis of the work of the institute has been upon the chemical side of medical problems (e. g., in the study of tuberculosis, diabetes, etc.), children's diseases, and the influence of heredity on cancer. While at the present time it is doing no work in industrial diseases, in the past it has supported a few special investigations in this field, viz., by Dr. Peter Bassoe on "The late manifestations of compressed-air disease" (*American Journal Medical Science*, April, 1913); by Dr. Emery R. Hayhurst on "Occupational brass poisoning" (*American Journal Medical Science*, May, 1913), "A study of lead poisoning in painters" (*American Journal Medical Science*, June, 1914), and "The prevalence of occupational features in disease" (*Journal American Medical Association*, December 12, 1914).

During the war several problems concerning the toxicity of various explosives or chemicals used in munitions plants were referred to the institute for investigation. The sudden cessation of munitions work terminated these investigations, most of them while incomplete. A synopsis of some of the results was published in the *Journal of Industrial Hygiene* (v. 2, No. 7, November, 1920, p. 247-252).

UNIVERSITY OF CHICAGO SETTLEMENT.

4630 Gross Avenue, Chicago, Ill. Miss Mary McDowell, head resident.

In 1910-1912 a survey of the stockyards district was undertaken by the Board of the University of Chicago Settlement (John C. Kennedy, in charge) to secure accurate and detailed information regarding the living and working conditions of the people in that neighborhood. The results of these investigations were published in three parts entitled:

A study of Chicago's stockyards community: (1) Opportunities in school and industry for children of the stockyards district. By Ernest L. Talbert. 1912. 64 p. (2) The American girl in the stockyards district. By Louise Montgomery. 1913. 70 p. (3) Wages and family budgets in the Chicago stockyards district, with wage statistics from other industries employing unskilled labor. By J. C. Kennedy and others. 1914. 80 p.

A study of night-working mothers in the packing houses, who had children under school age, has recently been made at the settlement, under the supervision of the head resident, by Miss Annie Konticke.

UNIVERSITY OF CINCINNATI.

Cincinnati, Ohio.

COLLEGE OF ENGINEERING AND COMMERCE.—Herman Schneider, dean. This college operates on what is known as the cooperative

system. Under this plan the practice of engineering is taught in a shop or on a railroad under actual commercial conditions, and the science underlying the practice is taught in the university. The students are divided into two sections, which alternate every two weeks, i. e., during each biweekly period one-half of the students are at the university and one-half are in the factories, and at the end of the period the sections are interchanged. The students are paid for their work in the shops at the same rate as other employees. The cooperative course is of five years' duration, eleven months in the year. For the year 1920-21 there was an enrollment of 950 students, and the number of cooperating firms is now 150, covering a great variety of industries not only in Cincinnati but also in other cities in Ohio and Indiana. An account of the evolution of the plan since its inception in 1906 and a description of the courses of instruction in chemical, civil, electrical, mechanical, and metallurgical engineering and in commerce for 1921-22 are published as University of Cincinnati Record, January, 1921 (ser. 1, v. 17, No. 1).

Direct correlation of the work of the shop with the instruction given in the university is made by the department of coordination, which studies each cooperating firm, devises organization charts showing the various kinds of work which a student can most profitably follow and keeps a graphical record for every student, which shows the various kinds of work he has done during the five years of his course.

The selection of men for the work for which they are to be trained being of special importance under this system, nearly all of the tests proposed for this purpose have been tried and the results have been largely negative. In a paper entitled "Selecting men for jobs" (reprinted from the Engineering Magazine, New York, June, 1916) Dean Schneider has discussed the methods tried and discarded and outlined the plan adopted, which is based on the study of the aptitude for different jobs of about 1,000 men who came under close observation in 10 years.

CLARK UNIVERSITY.

Worcester, Mass.

DEPARTMENT OF PSYCHOLOGY.—A report on work done in this department in testing the intelligence of office and shop workers, using Otis group intelligence scale, Forms A and B, and Otis general intelligence examination, was made at the annual meeting of the American Psychological Association in December, 1920, by Dean James P. Porter, and a brief summary of some of the results was published in its proceedings (Psychol. Bull., v. 18, No. 2, February, 1921). An attempt is to be made to ascertain the relation between scores obtained by various kinds of tests and to work out correlations between intelligence scores and (1) tenure of service, (2) scores in mechanical skill and trade tests, (3) measures of honesty, reliability, loyalty and possibly some other moral traits, and also the by-products of tests in industry. Dr. Porter spent the summer vacations of 1919 and 1920 as an unskilled laborer and as an office employee in a shipyard and a loom works to come into first-hand contact with personnel problems. A brief account of his observations is given in *Industry*, a bulletin issued by the Associated Industries of Massachusetts, for November 20, 1920.

A psychological practicum on mental and physical tests and the application of general intelligence scales (one hour a week) and a course on systematic applied psychology dealing, among other topics, with personnel analysis and the human element in business and industry (two hours a week) are given in this department by Dr. L. R. Geissler.

The *Journal of Applied Psychology* is published quarterly by Florence Chandler, Clark University.

CLEVELAND SCHOOL OF EDUCATION.

Cleveland, Ohio.

DEPARTMENT OF PSYCHOLOGY.—Garry C. Myers, head of department. The "Myers mental measure," by Caroline E. Myers and Garry C. Myers, a group intelligence test consisting wholly of pictures (published by The Sentinel, Carlisle, Pa.) which has been used in several school surveys, has been adapted by the authors to unskilled workmen, especially those of foreign speech.

A study of "Problems in skill" reported before Ohio Academy of Sciences, March 26, 1921. is still in progress.

COLORADO STATE TEACHERS' COLLEGE.

Greeley, Colo.

DEPARTMENT OF PSYCHOLOGY.—J. D. Heilman, in charge. A series of tests intended to determine a person's capacity to learn type-writing has been developed recently in this department.

COLUMBIA UNIVERSITY.

Broadway and One hundred and sixteenth Street, New York, N. Y.

DEPARTMENT OF EXTENSION TEACHING.—Four courses on personnel administration were given in this department in 1920-21 by Mr. L. Outhwaite: Business e31-32, Principles of personnel management, Tuesday afternoons, forming part of the general training in business management for students in the School of Business; Business e161-162, Personnel management, a general course, Tuesday evenings, intended primarily for graduates and persons in executive and personnel work in industry, dealing with personnel technique in the winter session and with problems connected with industrial relations and labor maintenance in the spring session; Business e163, Personnel methods for office executives, Monday evenings, winter session; Business e164, Personnel methods for institutions, Monday afternoons, spring session. A course on vocational and industrial psychology is given by Profs. H. L. Hollingworth and A. T. Poffenberger in the winter session (Psychology e145a) and repeated in the spring session (Psychology e146a). In connection with this, special conferences are arranged for students with practical and research problems. Details of these courses are given in a special circular, "Courses in personnel management" issued by the department.

DEPARTMENT OF PSYCHOLOGY.—H. L. Hollingworth, professor. The following is a list of the published reports of work done in the field of personnel research in this department:

Hollingworth, H. L. Vocational psychology. New York, D. Appleton, 1916. 308 p.

Hollingworth, H. L., and Poffenberger, A. T. Applied psychology. New York, D. Appleton, 1920. 389 p. (1st ed., 1917.)

Hollingsworth, H. L. Selection of salesmen. (*Salesmanship Magazine*, Dec., 1916.)

Rogers, H. W. Psychological tests for stenographers and typewriters. (*Jour. App. Psychol.*, v. 1, No. 3, Sept., 1917, p. 268-274.)

Oschin, Elsie. Vocational tests for retail saleswomen. (*Jour. App. Psychol.*, v. 2, No. 2, June, 1918, p. 148-155.)

Marcus, Lawrence. Vocational selection for specialized tasks: a study of selective tests for Hollerith-machine operatives. (*Jour. App. Psychol.*, v. 4, Nos. 2-3, June-Sept., 1920, p. 186-201.)

Rogers, H. W. Empirical tests in vocational selection. (Abstract in *Psychol. Bull.*, Feb., 1921, p. 95; forthcoming volume of *Archives of Psychology*.)

Bregman, E. O. Psychological tests in employment. (Forthcoming article in *Jour. App. Psychol.*)

Two unpublished master's essays, "Vocational selection of factory workers" (Lenora Allen) and "Selection of telephone operators" (Nead) are on file in the Columbia University Library.

COLLEGE OF PHYSICIANS AND SURGEONS.

437 West Fifty-ninth Street, New York.

DEPARTMENT OF PHYSIOLOGY.—Frederic S. Lee, professor of physiology. This department carries on research in industrial physiology, particularly in conjunction with United States Public Health Service, to which Prof. Lee is consulting physiologist. The following papers have been published:

Lee, Frederic S. Is the eight-hour working day rational? (*Science*, N. S., v. 44, p. 727-735, Nov., 1916.)

— The human machine and industrial efficiency. New York, Longman, Green & Co., 1918. vii, 119 p.

— The human machine in industry. (*Columbia University Quarterly*, v. 20, No. 1, Jan., 1918.)

— Industrial efficiency: The bearings of physiological science thereon; a review of recent work. (Reprint No. 448 from U. S. Public Health Reports, v. 33, No. 2, Jan. 11, 1918, p. 29-35.)

— The new science of industrial physiology. (Reprint No. 513 from U. S. Public Health Reports, v. 34, No. 15, Apr. 11, 1919, p. 723-728.)

Scott, Ernest L. The present status of our knowledge of fatigue products. (Reprint No. 465 from U. S. Public Health Reports, v. 33, No. 17, Apr. 26, 1918, p. 605-611.)

Hastings, A. B. An investigation of changes in the blood and urine resulting from fatigue. (U. S. Public Health Reports, 1919, v. 34, p. 1682.)

Scott, E. L., and Hastings, A. B. Some phases of protein catabolism and fatigue. (U. S. Public Health Reports, 1920, v. 35, p. 2445.)

An investigation on "Physiology of fatigue: physico-chemical manifestations of fatigue in the blood," by A. B. Hastings, has been completed but the results have not yet been published.

During the war, Prof. Lee was executive secretary of the divisional committee on industrial fatigue, section of sanitation, National Committee on Welfare Work, under the Council of National Defense and prepared its preliminary report on "Industrial fatigue" issued by the council as Welfare Work Series, No. 1, January, 1918, and also by United States Public Health Service under title "How industrial fatigue may be reduced" as its Reprint No. 482. He was also in charge of the investigation comparing an 8-hour plant and a 10-hour plant in the metal-working industry, reported in *Public Health Bulletin* No. 106.

Researches as to the physiological effects of air conditions were also made by Prof. Lee for the New York State Commission on Ventilation (see p. 54), of which he is a member.

TEACHERS' COLLEGE.

Columbia University, New York, N. Y.

DEPARTMENT OF PSYCHOLOGY.—E. L. Thorndike, professor of psychology. This department has developed the Thorndike intelligence examinations for high-school graduates, suitable for use in the selection of men for high-grade positions, in which intelligent planning is required. Sets of the current and back issues of these examinations may be ordered from the Bureau of Publications, Teachers' College.

It began also the work on the Stenquist tests of mechanical skill and mechanical intelligence, which are now being developed in the Bureau of Reference and Research of the New York City schools (see p. 65) by Mr. J. L. Stenquist.

Prof. Thorndike, in 1914, prepared for the Metropolitan Life Insurance Co. an entrance examination for general clerical workers, which has been in force in that company to the present time. He also prepared tests in connection with the study of engineering education by the Carnegie Foundation for the Advancement of Teaching. (See p. 93.)

Psychological researches on "Ventilation in relation of mental work," published in 1916 as Teachers' College Contributions to Education No. 78, were carried out in connection with the New York State Commission on Ventilation (see p. 54), of which Prof. Thorndike is a member.

Studies have also been made, especially by F. H. Knight and R. Franzen, of the qualities associated with success in the teaching profession in the elementary schools and also in high schools.

INSTITUTE FOR EDUCATIONAL RESEARCH.—Established at Teachers' College early in 1921, this institute is to consist of three divisions: Psychology, School experimentations, Field studies. The Division of Psychology will, during 1921 and 1922, study methods for determining an individual's promise for general office work, for trade and factory work, and for advanced study, with the hope of providing instruments whereby schools, vocational bureaus, and employers may guide the early careers of young persons from 15 to 18 years of age.

DARTMOUTH COLLEGE.

Hanover, N. H.

AMOS TUCK SCHOOL OF ADMINISTRATION AND FINANCE.—W. R. Gray, dean. A course on personnel management (three hours) is given by Prof. Malcolm Keir in the second semester of the second year. As part of the requirements for the degree of master of commercial science, students are required to make investigations and present a thesis in the field of business for which they are preparing. The thesis investigations on personnel management subjects undertaken during the academic year 1920-21 were: Need for personnel work in a meter manufacturing company, by T. W. Bradley; Welfare work in a paper manufacturing plant, by W. C. Hulbert; Welfare work in a corporation town, by F. T. Marden; Personnel work of a department store, by R. J. Miner.

DEPARTMENT OF PSYCHOLOGY.—A test is given by this department to each freshman class shortly after the opening of the fall term. It has no connection with admission but is an attempt to secure a picture

of each student's mental equipment. The test is divided into several parts, used to determine the student's aptitude for various subjects which he might pursue while in college. At the end of each year instructors are requested to make estimates of their students on the traits of intelligence, forcefulness, reliability, and personality, each of these points being carefully defined as a guide to the instructor. Associate Dean R. W. Husband receives the detailed data of both kinds for interpretation to the students and as an aid in guiding them toward appropriate occupations. In determining occupational aptitudes the individual's physical examination, financial and social status, personal experience (especially in the way of summer jobs), interest in student activities, and intellectual interests are also taken into account.

GEORGE PEABODY COLLEGE FOR TEACHERS.

Nashville, Tenn.

PSYCHOLOGICAL LABORATORY.—Joseph Peterson, professor of psychology. The following studies published from this laboratory may have relations to industrial psychology, inasmuch as they develop a kind of test that may be useful for the detection of special sorts of abilities as well as of general intelligence:

Experiments in rational learning, by Joseph Peterson (*Psychol. Rev.*, 1918, v. 25, p. 443-469).

Tentative norms in the rational learning test, by Joseph Peterson (*Jour. Applied Psychol.*, 1920, v. 4, p. 250-257).

The rational learning test applied to 81 college students, by Joseph Peterson (*Jour. Educ. Psychol.*, 1920, v. 11, p. 137-150).

The backward elimination of errors in mental maze learning, by Joseph Peterson (*Jour. Exper. Psychol.*, 1920, v. 3, p. 257-280).

A tentative standardization of the hard opposites test, by Mrs. Marie Hackl Means, is soon to appear from the press as a Psychological Monograph.

A study on the best method of scoring the Pressey cross-out tests, schedule E, will soon be ready for publication. Tests have been made on about 2,000 white and Negro children to determine race differences; the results when completed will have a bearing on the industrial life of the Negro in some respects.

HARVARD UNIVERSITY.

Cambridge, Mass.

BUREAU OF VOCATIONAL GUIDANCE, Lawrence Hall, Kirkland Street. John M. Brewer, director. This bureau is a department of the Graduate School of Education. Formerly the Vocation Bureau of Boston, it was transferred to Harvard University in 1917.

During the war the facilities of the bureau were largely given over to emergency courses in employment management, under the direction of the Ordnance Department of the United States Army, and to the preparation of studies on occupational opportunities for physically handicapped men. During 1919-1920 the bureau co-operated with the Associated Industries of Massachusetts (see p. 84) and Ludlow Manufacturing Associates²⁷ in the preparation of textbook materials for Americanization in the paper industry, the leather industry, and the jute industry. It also inaugurated discussion

²⁷ Paull, Charles H. English lessons for the jute industry, including community activities. 1919.

classes for foremen in factories and consultation work on foremen training, but these activities have since been abandoned.

The present services and activities of the bureau include correspondence and conferences on matters relating to vocational guidance, definite help for specific schools and school systems in introducing classes in occupations, university courses in vocational guidance and vocational education, and promotion of organizations for the extension of vocational guidance. The following vocational and personnel studies have been published:

Allen, Frederick J. *The shoe industry.* (Rev. ed.) New York, Henry Holt and Co., 1921.

— *Advertising as a vocation.* New York, Macmillan Co., 1919.

— *A guide to the study of occupations.* Cambridge, Harvard University Press, 1921.

Brewer, John M. *The vocational-guidance movement.* New York, Macmillan Co., 1918.

Brewer, John M., and Kelly, Roy W. *A selected critical bibliography of vocational guidance.* Cambridge, Harvard University, 1917.

Kelly, Roy W. *Hiring the worker.* New York, Industrial Management Library, 1918.

— *Training industrial workers.* New York, Ronald Press, 1920.

Kelly, Roy W., and Allen, Frederick J. *The shipbuilding industry.* Boston, Houghton Mifflin Co., 1918.

— *Shipyard employment.* U. S. Shipping Board, 1918.

The series of bulletins describing the opportunities for industrial cripples and disabled soldiers and sailors, which were prepared by this bureau, have been published by the Red Cross Institute for Crippled and Disabled Men, New York. (See p. 109.) They cover the coppersmithing, shoe, rubber, optical goods, and brush industries.

The bureau offers a research course in vocational education and vocational guidance; and, in the second half-year, courses on education in industry (H2) and vocational guidance in the occupations (K2).

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION.—W. B. Donham, dean. The study group in industrial management begins with a general introductory course (first year, first half), part of which is devoted to management problems arising from personal or human relations. This is followed in the second half of the first year by a course on labor technique which primarily covers the functions and underlying technique of employment management and its coordination with other departments of the business, particularly with the general executive. It deals with the technical and administrative problems arising out of the relation of employer and employee in industry, such as selection and placement of the workman, wage setting, adjustment and follow-up, training and education, safety, sanitation and health, housing and transportation, benefit associations.

In the second year a course on labor problems is given, in which the point of view taken is that of the executive responsible for labor policies and the work consists largely of research by the individual student on selected problems approved by the instructor where data may be obtained in the field. During the academic year 1920-21 four studies on labor turnover were made for graduate theses.

PSYCHOLOGICAL LABORATORY.—Herbert S. Langfeld, director. The work of the late Prof. Münsterberg in vocational psychology is

covered by his own treatise and an article containing additional results of his researches edited and published after his death, viz:

Münsterberg, Hugo. *Psychology and industrial efficiency*. Boston, Houghton, Mifflin & Co., 1913. 321 p.

Burt, Harold E. Prof. Münsterberg's vocational tests. (*Jour. App. Psychol.*, v. 1, No. 3, Sept., 1917, p. 201-213.)

At the present time a research to devise tests for the selection of the clerical force is being conducted at a manufacturing establishment, by H. L. Harley. In the laboratory the following work is in progress: Experiments on the social factors in industrial work, by I. C. Whittemore; methods of testing personality, by Gordon Allport; a problem of the selection of telegraphers, by Crawford Goldthwaite; a series of tests upon monotony and fatigue in industrial work, by H. L. Harley.

HARVARD MEDICAL SCHOOL.

240 Longwood Avenue, Boston, Mass. David L. Edsall, M. D., dean.

DIVISION OF INDUSTRIAL HYGIENE.—In 1918 Harvard University received funds with which to establish facilities for the training of industrial medical personnel and for laboratory, clinical, and field research in matters relating to the health of industrial workers. The funds were largely contributed by New England manufacturing establishments and interested individuals. They are under the administration of the Governing Committee on Industrial Hygiene (Wade Wright, M. D., secretary).

The courses offered in 1921-22 include applied physiology, industrial toxicology, industrial operation, nutrition, industrial psychiatry, health administration, legal aspects of industrial medical practice, and methods of air analysis, given at Harvard Medical School; industrial surgery and röntgenology, given at Boston City Hospital; vital statistics and industrial sanitation, given at the School of Engineering, Harvard University (except the ventilation portion of the latter course which is given at Harvard Medical School); industrial medicine, given at the Industrial Clinic, Massachusetts General Hospital (see p. 117) and the office of the Harvard Mercantile Health Work (v. *infra*). They lead to the certificate in public health in industrial hygiene (C. P. H.) of the School of Public Health of Harvard University and the Massachusetts Institute of Technology and to the doctorate in public health in industrial hygiene (Dr. P. H.) or the Ph. D. in hygiene, conferred by Harvard University. Detailed description of the courses, requirements for admission, etc., are given in a catalogue obtainable from the registrar of the division.

The laboratory research work conducted by the division includes special investigations in industrial poisoning (viz, by manganese, lead, ether, tetrachlorethane, and trinitrotoluene), effects of mineral dusts and development of new apparatus for dust measurement in the atmosphere, etc.

The occurrence, course, and prevention of chronic manganese poisoning were described by Drs. D. L. Edsall, F. P. Wilbur, and C. K. Drinker in the *Journal of Industrial Hygiene* (v. 1, No. 4, August, 1919); experimental studies on manganese were published by C. K. Rieman and Annie S. Minot in *Journal of Biological*

Chemistry (v. 42, No. 2, June, 1920, and v. 45, No. 1, December, 1920), and by C. K. Drinker, L. A. Shaw, and C. C. Lund in *Journal of Experimental Medicine* (v. 33, Nos. 1 and 2, January-February, 1921).

Dr. Alice Hamilton has published in the *Journal of Industrial Hygiene* a series of articles on industrial poisoning, viz: By lead (v. 1, No. 1, May, 1919), inorganic poisons other than lead (v. 1, No. 2, June, 1919), compounds of the aromatic series (v. 1, No. 4, August, 1919), ether in the manufacture of smokeless powder (v. 2, No. 2, June, 1920), trinitrotoluene (v. 3, No. 3, July, 1921); and a discussion of the etiology of so-called anilin tumors of the bladder (v. 3, No. 1, May, 1921). Other contributions in this field by Dr. Hamilton have been published by the United States Bureau of Labor Statistics (see p. 20).

Other papers on industrial poisoning from the division, published in the *Journal of Industrial Hygiene*, are: A study of 50 workers in trinitrotoluene, by T. J. Putnam and W. Herman (v. 1, No. 5, September, 1919); Blood examinations of trinitrotoluene workers, by G. R. Minot (v. 1, No. 6, October, 1919); Tetrachlorethane poisoning and its prevention, by D. C. Parmenter (v. 2, No. 12, April, 1921); A survey of carbon monoxide poisoning in American steel works, metal mines, and coal mines, by H. S. Forbes (v. 3, No. 1, May, 1921).

Two papers on the phagocytosis of solid particles (quartz and carbon) by W. O. Fenn appeared in the *Journal of General Physiology* (v. 3, No. 4, March 20, 1921) and a third on the same subject is in press. The results of the study of the question "Does the magnetic field constitute an industrial hazard?" by C. K. Drinker and R. M. Thomson, are published in the *Journal of Industrial Hygiene* (v. 3, No. 4, August, 1921). An article on headache as an occupational complaint, by S. Cobb and D. C. Parmenter, appeared in the October, 1921, issue of the same periodical.

A study of oil folliculitis has been made in the bacteriological laboratories by C. G. Page and L. D. Bushnell (*Jour. Indust. Hyg.*, v. 3, No. 2, June, 1921, p. 6275).

In December, 1919, under a cooperative arrangement between this division and a group of 25 merchants (19 in Boston, 6 in other cities), an investigation of health conditions and the problems of health conservation in stores was begun. It is known as the **HARVARD MERCANTILE HEALTH WORK** (Arthur B. Emmons, 2d, M. D., director; office at 3 Joy Street, Boston, Mass.). Three reports by the director have been published to date in the *Journal of Industrial Hygiene* under the title of "Health in mercantile establishments": I. The general principles of store medical service (v. 2, No. 7, November, 1920); II. Medical records (v. 2, No. 8, December, 1920); III. Common sanitary defects in stores (v. 3, No. 1, May, 1921). A paper on "A work chair," by A. B. Emmons and J. E. Goldthwait, arising out of this investigation, was published in the September, 1921, number of the same journal.

A printed list of the publications of the staff of the division, indicating reprints available for distribution, may be obtained from the secretary. It includes, in addition to the above, a number of articles dealing with industrial clinics and the study of occupational diseases in hospitals and various other general topics in the field of industrial hygiene.

The *Journal of Industrial Hygiene*, under an international board of editors, American and British, has been published monthly by this division since May, 1919. It contains both original contributions in industrial hygiene and abstracts of articles scattered through various technical, trade, and professional journals.

UNIVERSITY OF ILLINOIS.

Urbana, Ill.

BUREAU OF EDUCATIONAL RESEARCH.—B. R. Buckingham, director. Established in July, 1918, to assist in the investigation of educational questions throughout the State. The work of its Division of Educational Tests and Measurements (Walter S. Monroe, assistant director, in charge) includes (1) publication and purchase of test materials; (2) the preparation of accessory material for the administration and scoring of the tests; (3) distribution of these materials to the schools; (4) derivation of new tests. A few group intelligence scales are included within the scope of the material it distributes. (See Bulletin No. 2, its first annual report, p. 67-70.) The report of this division for 1919-20 forms Bulletin No. 5. It is expected that it will be necessary in the near future to set up a division of intelligence tests either within the bureau or in the Department of Educational Psychology or by some cooperative arrangement between the two.

"Mental tests for school use," by Charles E. Holley (91 p.), published in 1920 as Bulletin No. 4, contains a comparison of six group scales, viz: Otis group intelligence scale, Theisen-Fleming classification test, Whipple's group test for grammar grades, Pressey primer scale, Virginia delta I (Haggerty), and Sentence vocabulary scale (Holley).

The *Journal of Educational Research*, which has been published for the bureau since January, 1920, by the Public School Publishing Co., Bloomington, Ill., contains articles on intelligence tests and scales. It is the official organ of the National Association of Directors of Educational Research.

INDIANA UNIVERSITY.

Bloomington, Ind.

DEPARTMENT OF PSYCHOLOGY.—Harry D. Kitson, professor of psychology. The courses in this department relating to the industrial applications of psychology are as follows:

Psychological problems of employment management (41A), dealing with the selection of employees, measurement of their efficiency, devising just methods of promotion, making conditions favorable for production, etc., second semester, two hours a week (Dr. Kitson).

Psychological methods in industry (48), a graduate course giving particular attention to the measurement of the productiveness of employees, the reduction of fatigue, efficiency methods, etc., second semester, three hours a week (Dr. Kitson).

Psychological research in business and industrial psychology, employment management, personnel (Dr. Kitson).

The following papers dealing with subjects in this field have been published by Dr. Kitson:

Psychological tests and vocational guidance. (School Rev., v. 24, No. 3, p. 207-214, Mar., 1916.)

Interest as a criterion in vocational guidance. (Educ. Rev., v. 52, p. 349-356, Nov., 1916.)

Psychological measurements of college students. (*School and Society*, v. 6, p. 307-311, Sept. 15, 1917.)

Comparison between two scales for the estimation of intelligence. (*Jour. App. Psychol.*, Dec., 1919, p. 310-313.)

Vocational guidance and the theory of probability. (*School Rev.*, v. 28, No. 2, p. 143-150, Feb., 1920.)

Economic implications in the psychological doctrine of interest. (*Jour. Pol. Econ.*, v. 28, No. 4, p. 332-338, Apr., 1920.)

How to make employees interested in their jobs. (*Amer. Machinist*, v. 52, p. 483-485, May, 1920.)

Intelligence tests for college students. (*Chicago Schools Jour.*, v. 3, p. 167-170, Feb., 1921.)

Employment managers as vocational counselors. (*Indust. Manag.*, v. 61, p. 211, Mar. 1, 1921.)

Scientific method in job analysis. (*Jour. Pol. Econ.*, v. 29, No. 6, p. 508-514, June, 1921.) [An investigation of certain psychological phases of proofreading, including measurements of eye movements of good and poor proofreaders.]

Researches in progress include: The measurements of the output of hand compositors as affected by a particular form of bonus; the correlation between turnover and age.

Psychological research in mental and social measurements, under Dr. S. L. Pressey, is mainly directed to public-school uses. Some of the tests devised may also be useful in employment psychology, e. g., Pressey X-O tests, discussed in the following papers:

Cross-out tests, with suggestions as to a group scale of the emotions, by S. L. Pressey and L. W. Pressey. (*Jour. App. Psychol.*, v. 3, p. 138-150, 1919.)

First revision of a group scale designed for investigating the emotions, by S. L. Pressey and O. R. Chambers. (*Jour. App. Psychol.*, v. 4, p. 97-104, Mar., 1920.)

SCHOOL OF EDUCATION.—Henry Lester Smith, dean. For the past seven years the School of Education has held annual conferences on educational measurements (proceedings published as university bulletins). It maintains a Bureau of Cooperative Research in this field, the purposes of which are (a) research, and (b) service, by making easily accessible educational tests considered valuable to teachers.

DEPARTMENT OF VOCATIONAL EDUCATION.—Edwin A. Lee, professor of vocational education. This department offers, as a part of its teacher-training program under the provisions of the Smith-Hughes Act, a course in industrial relations. A syllabus of this course, by DeWitt S. Morgan, of Arsenal Technical Schools, Indianapolis, has been published as *Indiana University Bulletin* (v. 18) No. 12, December, 1920. In addition to general topics in the economics of industry and labor legislation, the course covers also factors in industrial efficiency; wages—methods of payment; problems of employment—hiring, discharging, promoting.

STATE UNIVERSITY OF IOWA.

Iowa City, Iowa.

DEPARTMENT OF PHILOSOPHY AND PSYCHOLOGY.—This department is at work on the following tests: (1) A test for the selection of eighth-grade students possessing stenographic predispositions; (2) a group test for the selection of clerical workers adapted to the employment departments which would maintain waiting lists and examine a large number of applicants at one time; (3) a group test for determining relative merit in elementary school teachers for city, county, and State examinations; (4) preliminary work has been started on a technique of measuring significant interests and tempera-

mental and emotional aspects of successful business executives in contrast to unsuccessful business executives.

Prof. C. E. Seashore has published a number of papers dealing with measures of musical talent and vocational and avocational guidance in music.

Volume 8 of the "University of Iowa studies in psychology," now in press (Psychological Monograph series), contains papers dealing with standard procedures in rating and directing musical talent, typewriting, and stenography tests, and special measures of fitness.

COLLEGE OF MEDICINE.—A study of "Health hazards in the pearl button industry," by E. G. Birge and L. C. Havens, made in the Division of Hygiene, Preventive Medicine, and Epidemiology, was published in *Journal of Industrial Hygiene* (v. 2, No. 3, July, 1920, p. 81-89). Certain studies in heating, lighting, and ventilating, with special reference to school buildings, are in progress at the present time.

An elective course on industrial hygiene (two hours a week) is given in the second semester. The students are expected to make an investigation and report on an assigned industrial condition.

JOHNS HOPKINS UNIVERSITY.

Homewood, Baltimore, Md.

PSYCHOLOGICAL LABORATORY.—Knight Dunlap, professor of experimental psychology. Two courses on the methods and technique of mental measurements and a course on their commercial and industrial applications are given in this department by Prof. Buford J. Johnson.

During 1919-20 research on problems of the psychological effects of tobacco smoking was conducted by Prof. Dunlap and others at the request of the American Committee for the Study of the Tobacco Problem. In furtherance of this investigation it was necessary to devise new apparatus and new forms of test material, which are available for research on many other problems. These include the "omitted letter test," 12 forms of which, of equal difficulty, have been completed; and new apparatus for the graphic recording of attention changes. Dr. L. W. Kline completed an investigation on the effects of inhibitions in the learning process.

JOHNS HOPKINS UNIVERSITY—School of Hygiene and Public Health.

310-312 West Monument Street, Baltimore, Md. William H. Welch, M. D., director.

Established June, 1916, with the aid of the Rockefeller Foundation of New York; opened for instruction October, 1918. The main objects of the school are to establish courses for the training of qualified persons for public-health work, to promote investigative work in hygiene and preventive medicine and provide opportunities for the training of investigators in these subjects, and to develop adequate means for the dissemination of sound hygienic knowledge. Occupational diseases and vocational hygiene are included in the scope of its work.

DEPARTMENT OF PHYSIOLOGY.—The courses of instruction in this department include:

1. The physiology of work and fatigue in industry (Dr. R. A. Spaeth), dealing with the theoretical and experimental aspects of

muscular and mental work and fatigue and practical problems, such as the limitation of scientific management, length of the industrial workday, night work, industrial accidents and fatigue, monotony and incentives, the emotionally unstable, civilian shell-shock analogues, standardization of industrial working conditions, physical examination of workers, and the physical, physiological, and psychological standardization of industrial workers by trades and processes (including laboratory training in tests and class visits and surveys of local industries, with reports and seminar discussion).

2. The physiological action of light and other radiations (Dr. Janet H. Clark), including the subject of illumination in relation to hygienic conditions of lighting in factories, with investigation of lighting conditions in local factories.

3. Respiration, ventilation, and climatology (Dr. A. L. Meyer), including a study of the various types of ventilation employed in factories, etc., and laboratory work on methods of air analysis and use of instruments applicable to the study of air conditions.

Some researches regarding the relation between susceptibility to toxins and fatigue are in progress.

The following contributions to industrial hygiene have recently been published:

The problem of fatigue, by R. A. Spaeth. (*Journal of Industrial Hygiene*, v. 1, No. 1, May, 1919, p. 22-53.) Bibliography, p. 42-53.

The prevention of fatigue in manufacturing industries, by R. A. Spaeth. (*Journal of Industrial Hygiene*, v. 1, No. 9, Jan., 1920, p. 435-447.)

A method for determining the finer dust particles in air, by A. L. Meyer. (*Journal of Industrial Hygiene*, v. 3, No. 2, June, 1921, p. 51-56.)

LELAND STANFORD JUNIOR UNIVERSITY.

Stanford University, Calif.

DEPARTMENT OF EDUCATION.—Lewis M. Terman, professor. The principal contribution from this department is the "Stanford revision" of the Binet-Simon scale. A guide to its use and a companion volume of source material have been issued, viz:

Terman, L. M. The measurement of intelligence. Boston, Houghton, Mifflin, 1916. 362 p.

Terman, L. M., and others. The Stanford revision and extension of the Binet-Simon scale for measuring intelligence. Baltimore, Warwick and York, 1917. 179 p. (*Educ. Psychol. Monog.* No. 18.)

The following articles on intelligence tests have been published in psychological journals:

Terman, L. M. A trial of mental and pedagogical tests in a civil-service examination for policemen and firemen. (*Jour. App. Psychol.*, v. 1, No. 1, Mar., 1917, p. 17-29.)

Terman, L. M., and Chamberlain, Mary B. Twenty-three serial tests of intelligence and their intercorrelation. (*Jour. App. Psychol.*, v. 2, No. 4, Dec., 1918, p. 341-354.)

Proctor, W. M. The use of psychological tests in the vocational guidance of high-school pupils. (*Jour. Educ. Research*, v. 2, No. 2, Sept., 1920, p. 533-546.)

Prof. Terman conducts courses on intelligence tests and psychology of endowment and a seminar on intelligence problems.

DEPARTMENT OF PHYSIOLOGY.—E. G. Martin, professor of physiology. The following investigations in industrial physiology have recently been completed in this laboratory:

Strength tests in industry, by E. G. Martin. (*U. S. Pub. Health Rep.*, Aug. 13, 1920, Reprint No. 606.)

Fatigue and efficiency of smokers in a strenuous mental occupation, by J. P. Baumberger and E. G. Martin. (Jour. Indust. Hyg., Oct., 1920, v. 2, No. 6, p. 207-214.)

Output study of users and nonusers of tobacco in a strenuous physical occupation, by Baumberger, Perry, and Martin. (Jour. Indust. Hyg., May, 1921, v. 3, No. 1, p. 1-10.)

Fatigue and error in a mental occupation, by J. P. Baumberger. (Jour. Indust. Hyg., Sept., 1921, v. 3, No. 5, p. 149-153.)

Researches are in progress on the following subjects: Fatigue and working capacity as affected by alternating operations, rest periods, and pride of craftsmanship; tolerances in the glass-bottle trade in relation to Weber's law and visual judgments of size; output studies of shipyard riveters.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

Cambridge, Mass.

A cooperative course (VI-A) in electrical engineering has been arranged between the institute and the General Electric Co. at West Lynn, Mass. The course covers a total of five years, the first two being identical with the regular course in electrical engineering (course VI) at the institute, the last three being divided between instruction in theory at the institute and instruction in practice at the Lynn works. The latter is supervised by a joint committee representing both the institute and the company. The class is divided into two sections which exchange places at the end of each period, of approximately three months, into which the time occupied by the cooperative training is divided. Further details are given in a special bulletin of the institute.

UNIVERSITY OF MICHIGAN.

Ann Arbor, Mich.

DEPARTMENT OF ECONOMICS.—Course 34 on employment management and an advanced course 34a following it are given by Asst. Prof. C. C. Edmonds. The following subjects are being developed by several students in seminar during the academic year 1920-21: Sources of supply of labor; selecting unskilled labor; illiterate and non-English speaking labor; the personnel department and the wage question.

DEPARTMENT OF EDUCATION.—Under the direction of the professor of industrial education (Geo. E. Myers) courses have been conducted in Grand Rapids for training of foremen. A brief outline of the course is given in the report of Committee on Foremanship Training of the National Association of Corporation Training. (See p. 118.)

BUREAU OF MENTAL TESTS AND MEASUREMENTS.—Guy M. Whipple, director. The work of this bureau in the department of education has consisted of studies of the intelligence of students who are failing in their university work. The director is the author of "Manual of mental and physical tests" (2d ed., Baltimore, 1914-15, 2 vols.).

UNIVERSITY OF MINNESOTA.

Minneapolis, Minn.

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY (COLLEGE OF EDUCATION).—M. E. Haggerty, head of department and dean of the college of education. A study on the relation of intelligence to the learning of telegraphy by Miss Margaretta Weber is in progress.

DEPARTMENT OF PSYCHOLOGY (COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS).—Richard M. Elliott, professor. This department has just been reorganized and now includes for the first time a part-time instructor in industrial psychology.

SCHOOL OF BUSINESS.—A program of two years' work offering basic training to (1) prospective heads of personnel in business establishments, and (2) to persons who expect to participate as trained experts in the adjustment of matters pertaining to the employment of labor, is outlined in the bulletin of the university containing the announcement of the School of Business. This includes two quarter courses on industrial relations in the department of economics, by Dr. Z. C. Dickinson, and a course on employment psychology in the department of psychology, by Dr. J. J. B. Morgan. The first quarter's work in industrial relations, intended also for students of the liberal arts college, covers the broader problems of labor policy, from the standpoint of management; the second course deals specifically with employment and personnel management; both include study of practice in representative establishments and written reports thereon. The course in employment psychology includes standardization of the personal interview, the principles and development of tests, and personnel classification; and independent investigations are required of each student.

NEW SCHOOL FOR SOCIAL RESEARCH.

465 West Twenty-third Street, New York, N. Y.

Courses in employment administration were given, during 1918-1920 by the Bureau of Industrial Research (see p. 87) in affiliation with the New School of Social Research. These were designed to provide professional training in this field, but were discontinued in 1920.

During the session 1920-21 a course in "problems of industrial relations" was given at the New School by Mr. Ordway Tead, devoted to research and critical analysis into the methods of administering the relations between management and men in industry.

An advanced course on problems of American labor, intended to meet the needs of persons engaged in labor work or carrying on research in the field, is among those announced to be given by Dr. Leo Wolman in 1921-22. Wage adjustment, systems of industrial relations, workers' control, and trade-union policy are among the topics to be dealt with.

In April, 1921, the first national conference on workers' education in the United States was held at the school by labor representatives and teachers in that field; and as a result of this conference, the Workers' Educational Bureau of America was organized, with headquarters at the school.

NEW YORK SCHOOL OF SOCIAL WORK.

105 East Twenty-second Street, New York, N. Y.

DEPARTMENT OF INDUSTRY.—The objectives of this department are (1) to provide vocational training for direct service in this field, (2) to make available such facts and sources of information concerning it as should be a part of the equipment of every intelligent social worker. The courses are conducted by John A. Fitch and Ordway Tead and include (27) psychology in industry; (121-122) principles

and practice of personnel administration. The latter includes field work in the employment departments of factories and stores in the vicinity. A study of one of the building trades-unions in New York City and a study of the place where personnel policy is decided upon in a selected group of corporations have recently been made.

NEW YORK UNIVERSITY.

Washington Square, New York, N. Y.

SCHOOL OF COMMERCE, ACCOUNTS, AND FINANCE.—In the Department of Business Management a course on labor and employment management (37–38) is given by J. D. Hackett, Thursday evenings, first and second terms, designed especially for the employees of progressive concerns who wish to learn the methods which have proved successful in the most advanced plants of the country. In the seminar on management (101–102) by Prof. Galloway and others, special investigations by students and faculty on various management problems are discussed. During 1920–21 these included (1) working out of a bonus system in a large office, (2) lowering of labor turnover in factories.

Courses are also given in the principles and methods of training employees (35–36), industrial lunchroom management (39) and prevention and first aid for the industrial worker (40).

TRAINING SCHOOL FOR TEACHERS OF RETAIL SELLING.—Norris A. Brisco, director. This school, recently established, prepares college graduates and others with equivalent general ability, who have passed satisfactorily a personality test, for positions as teachers of salesmanship in high schools or directors of training for department stores and for other managerial positions in retail stores. The general policy is determined by a committee of six merchants, three university and two public-school representatives. The so-called New York plan adopted is a two-year course, one-half the day being given to study and lectures, the other half to practical training in the stores. Working fellowships from \$700 to \$1,000 are provided; and a special coordinator devotes his time to investigation of store work for the guidance of the students. Instruction is given in retail salesmanship, methods of training, store organization, employment management, tests, ratings, and personnel problems, and in textiles, nontextiles, color and design. Each student prepares a written thesis from his observations and a study of some particular activity during his practical training period.

NORTHWESTERN UNIVERSITY.

Evanston, Ill. Walter Dill Scott, president.

SCHOOL OF COMMERCE, 31 Lake Street., Chicago, Ill.—Courses of instruction for employment managers, educational directors, labor managers, safety engineers, welfare directors, and others interested in employment and personnel problems are given in the evenings and on Saturday afternoons. They include: Employment management (second semester, Tuesday evenings), by Prof. Dutton and special lecturers, dealing with methods and technique; Personnel management (each semester, Saturday afternoons), by Mrs. Mary H. S. Hayes, in which the selection and handling of men is discussed from the basis of fundamental theory and emphasis is placed on aims and principles rather than on technique; Vocational and employment psychology (each semester, Monday evenings), by Prof. Webb.

The Bureau of Business Research, which is an integral part of the school, conducts investigations regarding business principles and practice and provides research opportunities for graduate students. It has recently completed a survey of industrial and personnel problems connected with the book and job printing industry in Chicago:

Babcock, F. M. Apprenticeship and labor recruiting, book and job printing industry, Chicago, Ill. 1921.

OHIO STATE UNIVERSITY.

Columbus, Ohio.

DEPARTMENT OF PSYCHOLOGY.—Rudolph Pintner, professor of psychology. The following studies in the field of personnel research have been published by members of this department:

Pintner, R., and Toops, H. A. Mental tests of unemployed men. (Jour. App. Psychol., v. 1, No. 4, Dec., 1917, p. 325-341; v. 2, No. 1, Mar., 1918, p. 15-25.)

Toops, H. A., and Pintner, R. Variability of the education of unemployed men. (Jour. App. Psychol., v. 2, No. 3, Sept., 1918, p. 207-218.)

— Educational differences among tradesmen. (Jour. App. Psychol., v. 3, No. 1, Mar., 1919, p. 33-49.)

Burt, Harold E. Employment psychology in the rubber industry. (Jour. App. Psychol., v. 4, No. 1, Mar., 1920, p. 1-17.)

The above studies of unemployed were made among persons registering in the Ohio free employment offices.

An investigation of vocational tests for agricultural engineers, by Dr. H. E. Burt, is in progress.

Dr. Burt is giving courses in industrial psychology and is planning to start a laboratory course in 1921-22 which will take the students out into the factories and business houses in Columbus in order to get practical experience in the field.

DEPARTMENT OF PUBLIC HEALTH AND SANITATION.—Dr. Emery R. Hayhurst, professor of hygiene and head of department. Beginning with the academic year 1921-22, a special course in industrial medicine is offered under the administration of this department, to prepare recent graduates in medicine, both men and women, to become medical directors and supervisors in industrial and mercantile establishments, and providing an internship on a part-time basis in industrial work. For the first year the number of students is limited to five, to assure their satisfactory placements for practical experience in the industries of Columbus. In addition to hygiene and sanitation as applied to industry, the economic placement of physically or mentally handicapped workers and the industrial rehabilitation of those suffering from all forms of temporary disablements are special features of this course.

PENNSYLVANIA STATE COLLEGE.

State College, Pa.

ENGINEERING EXPERIMENT STATION.—Grain-dust explosion experiments have been conducted here in cooperation with the Bureau of Chemistry, United States Department of Agriculture. (See p. 25.)

UNIVERSITY OF PENNSYLVANIA.

Philadelphia, Pa.

SCHOOL OF PUBLIC HYGIENE.—A. C. Abbott, M. D., director. The Industrial Hygiene Department of this school has conducted or collaborated in the following investigations:

(a) Completed and results published:

A survey of the cigar-making industry in Philadelphia, made in collaboration with the Clinic for Diseases of Occupation, University Hospital, for the Pennsylvania State Department of Labor; results published in—

Smyth, H. F., and Miller, T. Grier. A hygienic survey of cigar manufacturing in Philadelphia. (*Medicine and Surgery*, Sept., 1917, p. 698-718.)

Miller, T. G., and Smyth, H. F. The health hazards of cigar manufacturing. (*Penna. Med. Jour.*, Mar., 1918, v. 21, p. 360-364.)

Field and laboratory studies of dust conditions in various industries, in collaboration with the Clinic for Diseases of Occupation, University Hospital, published in—

Smyth, H. F., and Miller, T. G. A preliminary report on dust studies in various industries. (*Penna. Med. Jour.*, Mar., 1918, v. 21, p. 364-367.)

Miller, T. G., and Smyth, H. F. The dust hazard in certain industries. (*Jour. Amer. Med. Assoc.*, Mar. 2, 1918, v. 70, p. 599-604.)

Smyth, H. F. Suggested modifications of the standard method for the study of the dust content of air. (*Amer. Jour. Pub. Health*, Oct., 1918, v. 8, p. 769-771.)

Smyth, H. F., and Iszard, Miriam S. The practical hygienic efficiency of the Palmer apparatus for determining dust in air. (*Jour. Indust. Hyg.*, v. 3, No. 5, Sept., 1921, p. 159-167.)

Field and laboratory investigations on the detection and estimation of anilin fume in the air of departments of an anilin and intermediate products plant, published in—

Iszard, Miriam S. Determination of anilin vapors in the air. (*Jour. Indust. Hyg.*, v. 2, No. 7, Nov., 1920, p. 259-266.)

— Estimation of toxic water soluble dust with the Palmer apparatus. (*Idem*, v. 2, No. 9, Jan., 1921, p. 344-347.)

A survey and study of the anthrax problem in the horsehair-dressing industry in Philadelphia, in collaboration with the Division of Hygiene and Engineering, Pennsylvania State Department of Labor; results published in—

Smyth, H. F. The anthrax problem in horsehair. (*Jour. Indust. Hyg.*, v. 2, No. 11, Mar., 1921, p. 423-432.)

(b) Completed but results not as yet published:

Investigations of CO₂ and CO content of air in various departments of a felt-hat factory; survey of women in industry in Philadelphia after the war (master's thesis); inspection of an organic color mixing plant for the Philadelphia Department of Health.

In collaboration with the Clinic for Diseases of Occupation, University Hospital: Investigation of the cause of and prevention of outbreaks of oil grinder's furunculosis in a steel ball-bearing factory; physical examinations, sputum examinations, and X-rays of the lungs of workers in stove foundries.

(c) In progress:

Study of the Schattenfroh and other methods of disinfecting hides for anthrax; laboratory studies on the fate and effects of various industrial dusts inhaled by animals.

(d) Planned for the immediate future:

Studies on the relative resistance to tubercular and other affections of animals exposed to various industrial dusts.

In collaboration with the Henry Phipps Institute, Philadelphia: Surveys of industrial hygiene conditions in various industries in conjunction with physical examinations of employees.

In addition to the above research work, the public health students make weekly inspection trips during the second semester to various industrial establishments, during which trips advice and criticism is often asked for by plant officials and gladly given by the department representatives.

HENRY PHIPPS INSTITUTE FOR THE STUDY, TREATMENT, AND PREVENTION OF TUBERCULOSIS.

Seventh and Lombard Streets, Philadelphia, Pa. H. R. M. Landis, M. D., director of Clinical and Sociological Departments.

This institute, established in 1903 and supported up to May, 1919, entirely by funds donated by Mr. Henry Phipps, is said to be the first organization brought into existence for the express purpose of eradicating tuberculosis through intensive and scientific research. Since July 1, 1910, it has been under the supervision of the board of trustees of the University of Pennsylvania.

Three industrial hygiene studies made under its auspices have been published, viz:

Factors affecting the health of garment makers. By H. R. M. Landis and Janice S. Reed. (8th report of the Henry Phipps Institute. Philadelphia, 1915. 104 p.)

A Röntgenological study of the effects of dust inhalation upon the lungs. By H. K. Pancoast, T. G. Miller, and H. R. M. Landis. (*Am. Jour. of Roentgenology*, v. 5, No. 3, Mar., 1918, p. 129-138.)

The pathological and clinical manifestations following the inhalation of dust. By H. R. M. Landis. (*Jour. Indust. Hyg.*, v. 1, No. 3, July, 1919, p. 117-139.)

A survey of policemen and firemen in Philadelphia has recently been completed, but the data obtained is not yet ready for publication.

WHARTON SCHOOL OF FINANCE AND COMMERCE.

University of Pennsylvania, Philadelphia, Pa.

One of the three-year courses of study in this school covers the field of labor management (Prof. J. H. Willits, adviser). In the senior year this includes the following courses (each two hours, both terms) in the department of geography and industry: 9, Field work in industry (inspection of management problems in manufacturing establishments); 10, Industrial relations and employment management; 11, Research in management (an intensive study of a management problem of a specific industrial plant in the Philadelphia district); 12, Industrial policy.

DEPARTMENT OF INDUSTRIAL RESEARCH.—Joseph H. Willits, director. Established at the Wharton School of Finance and Commerce early in 1921, the purpose of this department is to "apply the methods of thorough scientific research to various fundamental problems in industry, such as industrial relations, so that human well-being, and especially the more general distribution of human well-being, may be increased, and to provide a bureau to which the various elements of the industrial community may turn for scientific research on industrial problems." The University of Pennsylvania, American Academy of Political and Social Science, Pennsylvania Department of Labor and Industry, Philadelphia Association for the Discussion of Employment Problems, and 15 firms representing the machine,

textile, transportation, and publishing industries have agreed to cooperate in its establishment and support. The Carnegie Corporation of New York has granted \$50,000 per annum for five years on the condition, which has been met, that \$10,000 is contributed locally. The funds will be administered by the trustees of the university.

Research conducted will follow the cooperative method, the personnel of the firms cooperating being available for laboratory purposes. The tentative program of subjects to be studied covers (a) industrial education and training (including foremen's courses, job analyses from standpoint of teachable content); (b) selection and guidance (including psychological and trade tests); (c) stabilization of work and workers (steadyding of production, unemployment funds, studies of turnover and absenteeism); (d) physiological problems (fatigue, results of medical and health work in terms of stability and productivity); (e) wages, standards, and cost of living; (f) plant relations with the community (public employment bureaus, public schools, State labor department). The installation of uniform records to secure comparable information from the cooperating concerns is to be undertaken immediately and a special evening training course in personnel work is to be given for employees selected by the cooperating firms.

Three investigations are in progress: (1) A study in foreman training, undertaken at the request of the Philadelphia Association for the Discussion of Employment Problems, to evaluate the results of the 20-week course for foremen given by that association, by interviews with a considerable number of the 700 foremen who took the course; (2) a study of plant publications; (3) a study of the causes of leaving, being made cooperatively with a group of concerns which regularly report their "leaves" to the department.

UNIVERSITY OF PITTSBURGH.

Bigelow Boulevard, Pittsburgh, Pa.

SCHOOL OF ECONOMICS.—A course on personnel administration, two hours each week throughout the year, is given by Mr. B. F. Ashe, employment manager for the American Zinc & Chemical Co., Langeloth, Pa.

SCHOOL OF ENGINEERING.—F. L. Bishop, dean. The cooperative plan of engineering education, which has been in operation in this school since 1911, is described in a special issue of the university bulletin. The freshman year, the summer term following, the sophomore year, and the senior year are spent entirely in school; the intervening terms of the sophomore and junior years are spent alternately in the school and in the cooperative work in engineering industries of the Pittsburgh district, each class being divided into two sections for this purpose.

PRINCE SCHOOL OF EDUCATION FOR STORE SERVICE.

66 Beacon Street, Boston, Mass. Mrs. Lucinda Wyman Prince, director.

Established in 1905 as the School of Salesmanship at the Women's Educational and Industrial Union in Boston (see p. 163); in 1918 the school moved into quarters of its own and the present name was adopted. Its original object was to provide training for saleswomen in department stores. The chief purpose of the school now is to train

personnel executives—educational directors, employment managers, superintendents—for stores and, to an increasing extent, for factories. It is affiliated with Simmons College, and the National Retail Dry Goods Association (see p. 133) and the Boston merchants have cooperated in its support. A history of this school, together with an account of the training methods developed, under the title "Department store education," by Helen Rich Norton has been published by United States Bureau of Education as its Bulletin (1917) No. 9.

The director of the school is the author of Bulletin No. 22 (Commercial Education Series No. 1), "Retail selling" (103 p.), issued by the Federal Board for Vocational Education in 1919.

PRINCE ALUMNÆ ASSOCIATION holds its annual meeting at the same time as the National Retail Dry Goods Association. Sessions are devoted to the presentation and discussion of educational, employment and research work in stores and to the work of teachers of retail selling in the public schools. Its publication *The Prince Alumnæ News* contains papers on department store personnel work.

PRINCETON UNIVERSITY.

Princeton, N. J.

PSYCHOLOGICAL LABORATORY.—H. C. McComas, director. The contributions from this laboratory include the following monographs on mental tests:

Brigham, C. C. Two studies in mental tests: I. Variable factors in the Binet tests. II. The diagnostic value of some mental tests. 1917. 254 p. (Psychol. Monographs, v. 24, No. 1, whole No. 102.)

Doll, E. A. The growth of intelligence. 1921. 130 p. (Psychol. Monographs, v. 29, No. 2, whole No. 131.)

A study in tests of mechanical ingenuity, by S. W. Prince, has been completed recently but is not yet published.

PURDUE UNIVERSITY.

Lafayette, Ind.

SCHOOL OF MECHANICAL ENGINEERING.—George H. Shepard, professor of industrial engineering and management, is conducting tests to obtain quantitative data on the relation between rest periods during working hours in industry and production or output. A preliminary report on this year's tests was presented at the spring meeting, 1921, of the Society of Industrial Engineers; a final report is to be published in *Industrial Management* in the fall of 1921. It is expected that these tests will be continued from year to year as a regular feature of the work in industrial management at Purdue University.

SIMMONS COLLEGE.

Boston, Mass.

DEPARTMENT OF PSYCHOLOGY.—In 1920 Dr. A. A. Roback, special instructor in psychology, prepared a set of 12 tests for a general intelligence examination of the students of the college, which has been printed under the title "Roback mentality tests for superior adults." A report on this examination is published in *The Simmons College Review* (v. 3, No. 8, June, 1921, p. 313-318).

SCHOOL OF SOCIAL WORK.—During the past year the class in social inquiry, under the direction of Miss Lucile Eaves, made a study

dealing with the employment of handicapped women. One thousand case records from the Bureau for the Handicapped, maintained by the Women's Educational and Industrial Union, were tabulated. The results of the investigation have been published by the Union, with five other studies made by students in this school under the title "Gainful employment for handicapped women" (32 p.).

In the previous year students in this class copied and tabulated the records of one thousand industrial accidents to wage-earning children 14 and 15 years of age reported to the Massachusetts Industrial Accident Board, 1918-19. The results of this study were published in *The American Child* (v. 2, No. 3, November, 1920, p. 222-232) and also as a separate pamphlet by the Women's Educational and Industrial Union.

SMITH COLLEGE.

Northampton, Mass.

TRAINING SCHOOL FOR SOCIAL WORK.—Prof. F. Stuart Chapin, director. A graduate professional school offering training courses in psychiatric social work, medical social work, and community service. It originated as an emergency training course in psychiatric social work established in 1918 by the authorities of Smith College and the Boston Psychopathic Hospital under the auspices of the National Committee for Mental Hygiene²⁸ (see p. 122) primarily to provide a supply of specially trained social workers to deal with mental and nervous cases among returned soldiers.

The duration of the course is now 14 months, in three divisions—a summer session of eight weeks of theoretical instruction, combined with clinical observation, at Smith College; a training period of nine months' practical instruction carried on in cooperation with hospitals and settlements (during 1920-21 in Boston, Cincinnati, Minneapolis, New York, and Philadelphia), and a concluding summer session of eight weeks of advanced study. In the belief that the social worker with psychiatric experience will be of particular value in industrial personnel work, a beginning has been made in adapting the course to provide special preparation for the industrial field. It includes courses on social psychology, mental tests, case work, industrial problems, and social psychiatry. Details are given in Bulletin of Smith College Training School for Social Work, 1921-22.

The second session's work includes the preparation and writing of a thesis. The following are among the thesis subjects of the students completing the course in August, 1921: Two studies of the results of vocational training under the Federal Board for Vocational Education (1) in 25 cases of dementia præcox (or epilepsy), (2) in 25 cases of constitutional psychopathic inferiority; the epileptic in industry—a study of 25 cases from Monson State Hospital and Boston Psychopathic Hospital out-patient department; a comparison of employment of neuro-circulatory asthenia patients before and after military service; investigation of all cases in training in Minneapolis and St. Paul, classified according to type of mental disorder, vocational training, previous training, etc.; the social and economic problems of 25 cases of epilepsy.

²⁸ See also this committee's Reprints Nos. 35 and 46 from *Mental Hygiene*, v. 2, No. 4, p. 582-593, Oct. 1918; v. 3, No. 1, p. 59-64, Jan. 1919.

UNIVERSITY OF SOUTHERN CALIFORNIA.

Thirty-fifth and University Avenues, Los Angeles, Calif.

COLLEGE OF COMMERCE AND BUSINESS ADMINISTRATION.—A course of lectures and discussions on employment management is given by Prof. H. J. Stonier with the cooperation of the Employment Managers' Association of Los Angeles, by which a supervisor of employment in some large business firm in the city lectures each week before the class (two units, throughout the year). A mimeographed outline of the course is available for distribution. A course on industrial management (including the efficiency movement, selecting and training help, and training of future executives) is given by Mr. Clayton Rogers in the second semester (two units).

SYRACUSE UNIVERSITY.

Syracuse, N. Y.

SCHOOL OF BUSINESS ADMINISTRATION.—J. Herman Wharton, dean. The courses of instruction in this school dealing with personnel matters are: Psychology of personnel management and Applied psychology: mental and social measurements, by Prof. M. A. May (Business psychology 4 and 5, each three hours, first semester); Employment and personnel management, by Dr. H. H. S. Aimes (three hours, second semester); Industrial hygiene, by Dr. F. W. Sears (Business administration 7, two hours, first semester).

UNIVERSITY OF TEXAS.

Austin, Tex.

DEPARTMENT OF PSYCHOLOGY.—Thomas R. Garth, professor. Special studies have been made in this department on mental fatigue and racial differences:

Garth, Thomas R. Racial differences in mental fatigue. (*Jour. App. Psychol.*, v. 4, Nos. 2-3, June-Sept., 1920, p. 235-244.)

— The results of some tests on full and mixed blood Indians. (*Psychol. Bull.*, v. 18, No. 2, Feb., 1921, p. 94-95.)

UNIVERSITY OF WASHINGTON.

Seattle, Wash.

DEPARTMENT OF PSYCHOLOGY.—Stevenson Smith, head of department. This department has standardized two sets of general intelligence tests and is at present engaged in testing students of the university with a new form of group test. This material has not yet been published.

WASHINGTON UNIVERSITY.

St. Louis, Mo.

SCHOOL OF COMMERCE AND FINANCE.—Course 60, Employment problems, given by Prof. G. W. Stephens (three hours a week, second semester), deals principally with the various wage systems, selection of employees, records of employees, welfare and betterment work.

UNIVERSITY OF WISCONSIN.

Madison, Wis.

BUREAU OF COMMERCIAL AND INDUSTRIAL RELATIONS.—Willis Wisler, chief. This bureau, established 1920 in the University Extension Division, aims to furnish three types of service:

1. A central library and research laboratory to serve as a practical clearing house for the best practices in the field of industrial and commercial relations.

2. A monthly bulletin service on timely and fundamental topics, mechanically arranged to admit of convenient filing and indexing.

3. A consulting service where other professional services are not available.

From time to time special bulletins will be prepared along lines indicated by the interest and inquiries of employers and employees. This service is intended for the entire public affected by industrial and commercial relations and of necessity must confine itself to legitimately informational and educational treatments of problems presented to it for aid or solution. In conjunction with several departments of the university a plan is being worked out for detailing, by special arrangement, advanced students to special projects in industrial units, working under the close supervision of their departments and of this bureau.

A series of circulars (mimeographed) has been issued, 1920-21, as follows:

No. 1, Explanation of plan (2 p.). No. 2, A labor policy and the labor audit (13 p.). Special No. 2-A, A labor audit—specimen report (14 p.). No. 3, The cycle of employment (10 p.). Nos. 3-A, 3-B, Employment forms and routine (13, 6 p.). No. 3-C, Employment forms and routine for the small plant (5 p.). No. 4, Job analysis (15 p.). No. 5, Absenteeism (7 p.). No. 5-A, Absentee; forms and routine (11 p.). No. 6, Plant organs (7 p.). No. 7, Practical methods for selecting employees (9 p.). No. 8, Wages, earnings, and incentives (13 p.). No. 8-A, Audit of a gain-sharing wage plan (7 p.). No. 10-A, Industrial representation plans in open-shop plants (13 p.).

No. 9, Industrial housing, is in preparation.

DEPARTMENT OF ECONOMICS.—John R. Commons, professor of economics. A two-semester course of instruction in labor management (Economics 149) is given in this department by Mr. Wisler, in which the actual problems coming into the above bureau are used as laboratory material. As far as possible, the theses are prepared for use by the Bureau of Commercial and Industrial Relations in its services to employers or labor unions; and each student is looked to for expert advice on the topics within the range of his thesis subject. In the second semester the employment practices of a variety of firms are analyzed and reported on by members of the class; and each particular system is tried out in class, the student to whom it is assigned acting as labor manager, with others impersonating various types of applicants. A prerequisite course on employment management (Economics 171) is given by Mr. D. D. Lescohier.

The research course, conducted by Prof. Commons with other instructors in the department, is divided into four sections: (a) Labor legislation, (b) Labor history and industrial government, (c) Unemployment, causes and remedies, (d) Labor management. Doctoral dissertations in 1921 included Government in industry (O. F. Carpenter), Collective bargaining in the men's ready-made clothing industry (Jean Davis), Collective bargaining in the book and job printing industry (Ethel B. Dietrich), Wage measurement and the management of labor (A. P. Haake); for 1922, Employee participation in management of industry (H. H. Smith) and The labor union and production (Mrs. Glenn Turner) are announced. In 1921 the Macmillan Co., New York, published a volume entitled "Industrial government" (425 p.), by Prof. Commons and others in the department, containing the results of field investigations of 18 experiments studied July-September, 1919.

DEPARTMENT OF EDUCATION.—V. A. C. Henmon, director. A study on testing vocational aptitude for typesetting (compositors) by Prof.

M. V. O'Shea is in progress. Prof. Henmon is cooperating with Mr. Ruggles of the Wisconsin Civil Service Commission in devising a set of tests for aptitude as junior clerks. He is also completing the statistical work on his set of aptitude tests for aviators (published in *Jour. App. Psychol.*, v. 3, No. 2, June, 1919, p. 103-109). Work on the problem of a team of tests for measuring physical efficiency is also in progress.

PSYCHOLOGICAL LABORATORY.—Clark L. Hull, director. Work on the following problems in personnel research is in progress in this laboratory: (1) To determine aptitude for learning lathe work (steel)—in cooperation with the course in engineering shop practice; (2) to determine aptitude for learning to operate knitting machines—in cooperation with a large hosiery company (this will probably be published in the *Journal of Applied Psychology* when completed); (3) to determine aptitude for becoming "maters" of hose, that is, choosing from stock pairs of hose which match in size and shade; (4) standardization of a set of tests for vocational aptitude in journalism—in cooperation with Max Freyd of Carnegie Institute of Technology; (5) weighting a team of tests to determine skill in mechanical drawing.

UNIVERSITY OF WYOMING.

Laramie, Wyo.

DEPARTMENT OF PHILOSOPHY AND PSYCHOLOGY.—Dr. June E. Downey. An extensive report on the Will-Temperament, including directions for giving and scoring both the individual and the group form of the test is in preparation. The following papers on this subject have already appeared:

The will-profile. (*Univ. of Wyoming Bull.*, Dept. of Psychol., No. 3, 1919.)

The adolescent will-profile. (*Jour. Educ. Psychol.*, Mar., 1920.)

Some volitional patterns revealed by the will-profile. (*Jour. Exp. Psychol.*, Aug., 1920.)

YALE UNIVERSITY.

New Haven, Conn.

DEPARTMENT OF EDUCATION (GRADUATE SCHOOL).—Dr. J. Crosby Chapman, associate professor of educational psychology, has recently issued the following work dealing with the trade tests used in the United States Army during the war period:

Chapman, James Crosby. Trade tests; the scientific measurement of trade proficiency. New York. H. Holt & Co., 1921. ix, 435 p.

The Psycho-Clinic (Dr. Arnold Gesell, director) is constantly dealing with personnel problems as represented by adolescents seeking employment, particularly those with subnormal or unstable constitutions. (See also p. 45.)

PSYCHOLOGICAL LABORATORY.—A contribution on "Psychological tests for stenographers and typewriters," by H. W. Rogers, was published in *Journal of Applied Psychology* (1917, v. 1, p. 268-274). The results of two years' research with empirical vocational tests to detect typing ability; and to predict ultimate physiological capacity in typing are to be published in the fall of 1921 in the *Archives of Psychology*, Columbia University.

A paper on "The analysis of trade ability," by E. S. Robinson, appeared in the *Journal of Applied Psychology* (v. 3, No. 4, p. 352-357, Dec., 1919).

LABORATORY OF APPLIED PHYSIOLOGY.—Park and Oak Streets. Yandell Henderson, professor of applied physiology. The researches conducted in this laboratory have been mainly studies in the physiology and toxicology of gases, and the treatment of asphyxia, etc., particularly in connection with the United States Bureau of Mines, to which Prof. Henderson is consulting physiologist, and, during the war, with the Chemical Warfare Service and the Medical Research Board of the Air Service. They include experimental studies of the various forms of mine-rescue oxygen helmets and their adaptation to the physiological needs of the wearer (Bureau of Mines Technical Paper No. 62); investigations of resuscitation apparatus, in connection with the work of the commissions on resuscitation (see p. 125) of which Prof. Henderson was a member; the development of efficient gas masks for the military service and apparatus and methods of testing aviators in respect to their ability to withstand altitude, and of any oxygen inhaler to be used in the treatment of carbon monoxide asphyxiation. Dr. Henderson's studies for the Bureau of Mines on carbon monoxide poisoning and on resuscitation and artificial respiration were published in the *Journal of the American Medical Association*, 1916 (v. 67, p. 1-5, 580-583).

In 1919-20 the staff of the laboratory investigated the physiological effects of automobile exhaust gas for the commissions of the States of New York and New Jersey in charge of the proposed vehicular tunnel under the Hudson River to establish standards for ventilation. The results, which are applicable to any tunnel, garage, or factory where the air is contaminated with the products of combustion and similar gases and vapors, have appeared in abbreviated form in the *Journal of Industrial Hygiene*, July and August, 1921. The full report is in press as a bulletin of the Bureau of Mines and as part of the report of the chief engineer of the commissions.

Other papers in this field have been published or completed for publication in various journals, as follows:

The elimination of carbon monoxide from the blood after a dangerous degree of asphyxiation, and a therapy for accelerating the elimination, by Y. Henderson and H. W. Haggard. (*J. Pharm. and Exp. Therap.*, 1920, v. 16, p. 11-20.)

The anesthetic and convulsant effects of gasoline vapor, by H. W. Haggard. (*J. Pharm. and Exp. Therap.*, 1920, v. 16, p. 401-404.)

Respiration and blood alkali during carbon monoxide asphyxia, by H. W. Haggard and Y. Henderson. (*J. Biol. Chem.*, 1921, v. 47, p. 421-433.)

The treatment of carbon monoxide poisoning, by Y. Henderson. (*J. Amer. Med. Assn.*, 1921, in press.)

Studies in carbon monoxide asphyxia. I. The behavior of the heart. By H. W. Haggard. (*Amer. J. Physiol.*, 1921, v. 56, p. 390-403.) Two other studies in this series are ready for publication.

Studies in hydrogen sulphide poisoning, I-III. By H. W. Haggard. (Ready for publication; I to appear shortly in *J. Biol. Chem.*)

The series of investigations is being continued for the Bureau of Mines and several researches are still incomplete.

YALE UNIVERSITY—School of Medicine.

DEPARTMENT OF PUBLIC HEALTH.—C.-E. A. Winslow, professor of public health. This department carries on research in industrial hygiene, particularly in conjunction with the Office of Industrial Hygiene and Sanitation of the United States Public Health Service. The latter has employed one or more sanitary experts and

the Yale Medical School has provided the laboratory for carrying on the work. Special attention has been given to the dust hazard in industry. In addition, extensive factory surveys have been made and studies of illumination, ventilation, and general sanitary conditions have been conducted in many of the plants in the neighborhood of New Haven. The published results of these researches are as follows:

Winslow, C.-E. A., Greenburg, L., and Angermeyer, H. C. Standards for measuring the efficiency of exhaust systems in polishing shops. (U. S. Pub. Health Rep., Mar. 7, 1919, Reprint No. 509.)

Winslow, C.-E. A., Greenburg, L. and D. The dust hazard in the abrasive industry. (U. S. Pub. Health Rep., May 30, 1919, Reprint No. 530.)

Winslow, C.-E. A., Greenburg, L., and Reeves, E. H. The efficiency of certain devices used for the protection of sand blasters against the dust hazard. (U. S. Pub. Health Rep., Mar. 5, 1920, Reprint No. 585.)

Winslow, C.-E. A., and Greenburg, L. A study of the dust hazard in the wet and dry grinding shops of an ax factory. (U. S. Pub. Health Rep., Oct. 8, 1920, Reprint No. 616.)

Winslow C.-E. A., and Greenburg, L. Industrial tuberculosis and the control of the factory dust problem. (Jour. Indust., Hyg., Jan.-Feb., 1921, v. 2, Nos. 9-10, p. 333-343, 378-395.)

Drury, W. H. The incidence of tuberculosis among polishers and grinders in an ax factory. (U. S. Pub. Health Rep., Feb. 4, 1921, p. 159-178.)

The following studies have been completed and are in press or unpublished:

Winslow, C.-E. A., and Hewitt, E. L. The relation between katathermometer and temperature readings under ordinary indoor conditions. (In press.)

Greenburg, L. Carbonated water as a source of five cases of lead poisoning. (Unpublished.)

Winslow, C.-E. A., and Greenburg, L. A health survey of a small-arms manufacturing plant. (Unpublished.)

Group of miscellaneous factory inspection studies. (Unpublished.)

Extensive studies on the katathermometer (of Prof. Leonard Hill) are now in course of preparation.

Since 1916 the university has offered courses in industrial hygiene to students in public health in the graduate school, and students have been given the opportunity of obtaining their final degrees on the basis of thesis work undertaken in industrial hazards.



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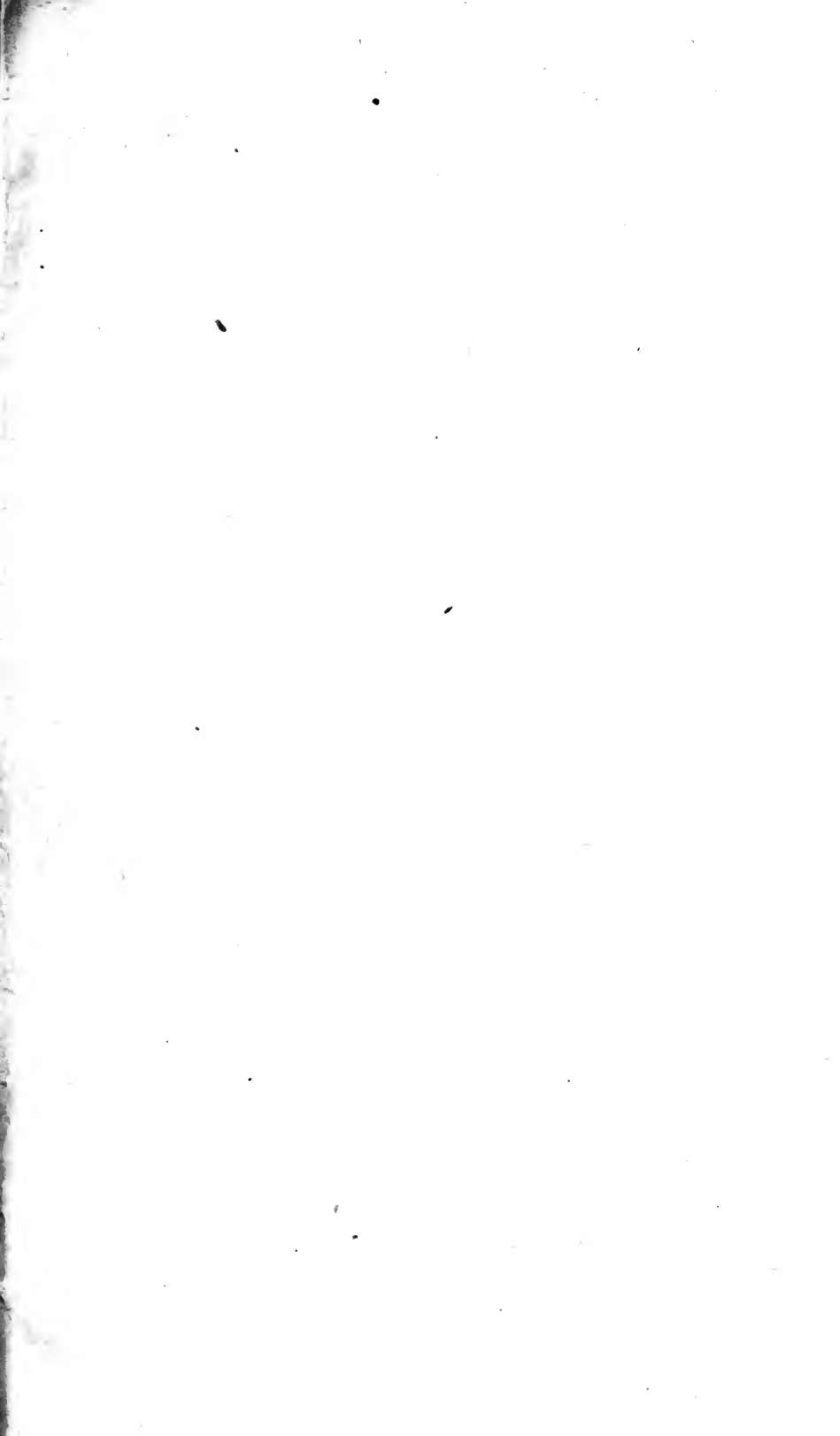
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